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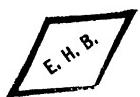
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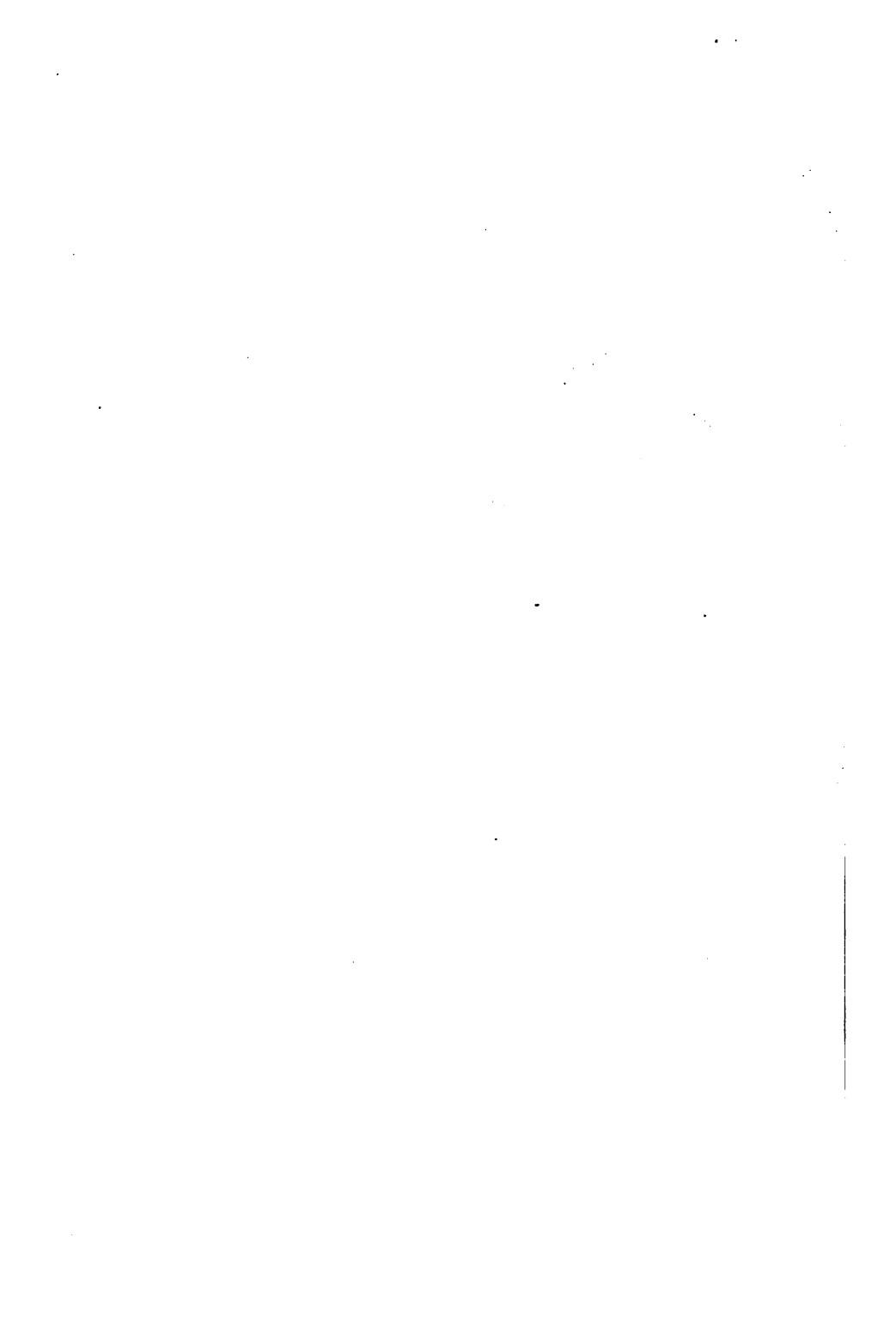
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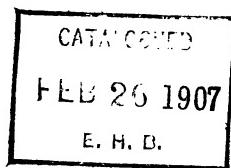
P. BRYNBERG PORTER, A. M., M. D.,
EDITOR.



JUNE, 1906.



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HISTORY OF ORGANIZATION.

The Medical Association of the Greater City of New York was incorporated April 5, 1899.

It was organized for the purpose of having a Society of the highest class in the character of its membership and of its scientific work, which should represent the best elements in the medical profession in all the five boroughs of the enlarged city.

The Presidents of the Society have been as follows:

| | | |
|------------------------------|------------------|-------|
| Dr. AUSTIN FLINT, | elected in June, | 1899. |
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| Dr. ANDREW H. SMITH, | " " | 1902. |
| Dr. THOMAS E. SATTERTHWAITE, | " " | 1904. |
| " " | " " | 1906. |

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At a meeting of the Executive Council, held May 31, 1906, the Recording Secretary, Dr. P. BRYNBERG PORTER, was authorized to issue the Year Book of the Association for 1906.

~~The power to make rules and regulations relating to the government of the Association, and to the conduct of its meetings, shall be vested in the Board of Directors, which shall be composed of the members of the Association, and shall be chosen by the members of the Association, in such manner as may be determined.~~

"The officers of the Association shall be a President, a Vice-President, a Recording Secretary, a Corresponding and Finance Secretary, to be elected by the members. These shall meet together with the Committee for the Benefits of Friends, Friends, Friends and Freedoms, to be elected by the members respectively, together with two additional members to be elected by the Association at large, shall constitute an Executive Council, which Executive Council, for all legal purposes, shall, after April 5, 1890, be the Trustees of the Association."

"The annual dues for each current year, payable in advance after each annual meeting, shall be three dollars."

"Members whose dues and assessments are not fully paid shall not be candidates for any official position in the Association, nor shall they be entitled to vote in its executive sessions."

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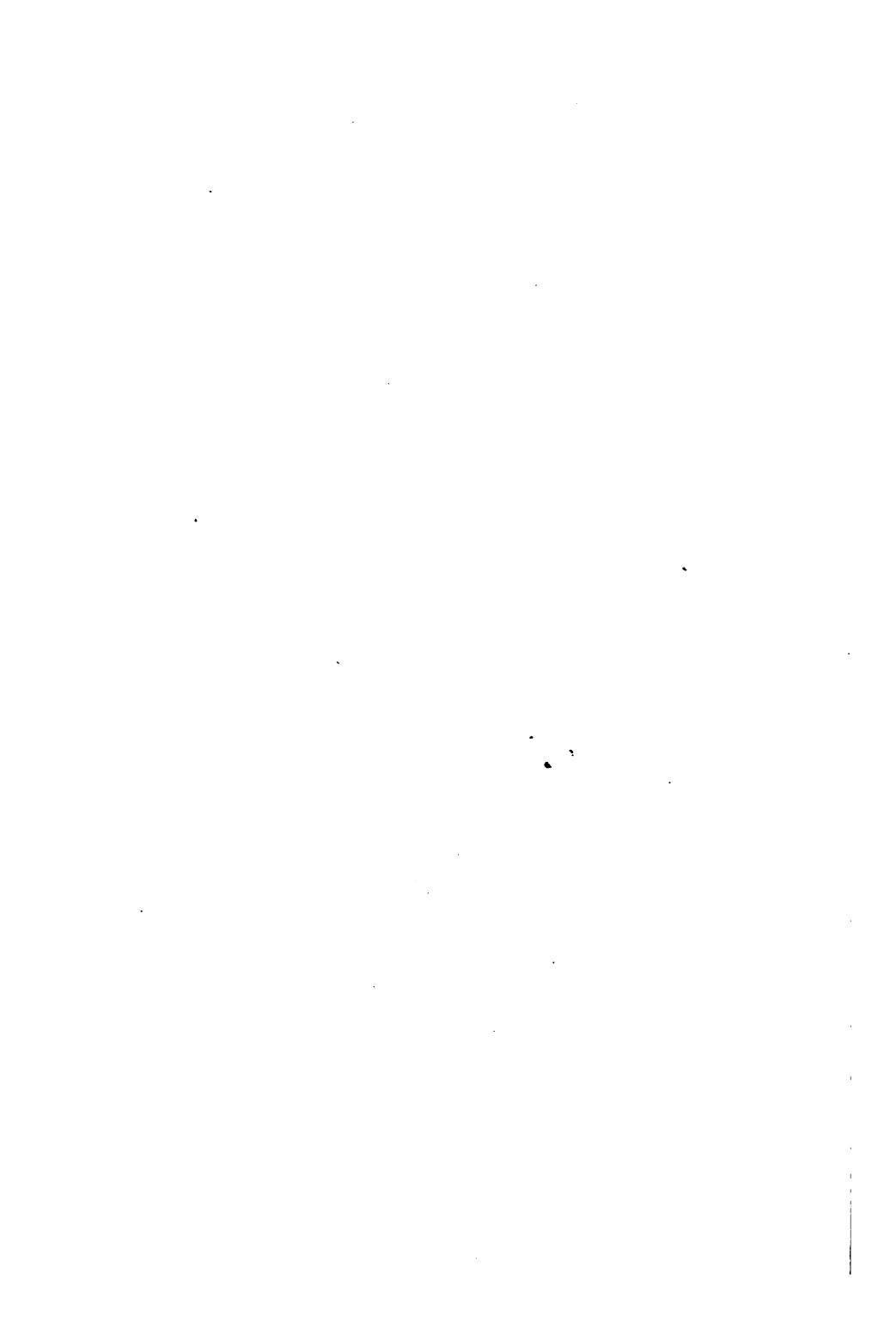
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Howell, C. Herbert, 117 W. 93d St., Manhattan.
Hubby, Lester M., 40 W. 84th St., Manhattan.
Huber, Francis, 209 E. 17th St., Manhattan.
Hughes, Peter, 467 Bedford Ave., Brooklyn.
Hull, Joseph J., The Albany, 51st St. and Broadway,
Manhattan.
Hunt, Joseph H., 1085 Bedford Ave., Brooklyn.
Hunter, Dwight W., 80 W. 40th St., Manhattan.
Hurd, Lee M., 15 E. 48th St., Manhattan.
Hyde, Frederic E., 20 W. 53d St., Manhattan.
Iglehart, Asa Stewart, 66 W. 47th St., Manhattan.
Illoway, Henry, 1113 Madison Ave., Manhattan.
Imperatori, Charles Johnstone, 638 Lexington Ave., Man-
hattan.
Jacoby, George W., 44 W. 72d St., Manhattan.
Jagger, Archer W., 410 Amity St., Flushing, Queens.
James, Charles S., 316 E. 18th St., Manhattan.
James, Henry Murray, 469 Hudson St., Manhattan.
James, Walter B., 17 W. 54th St., Manhattan.
James, Warren A., 528 Bedford Ave., Brooklyn.
Jenkins, John A., 271 Jefferson Ave., Brooklyn.

Jessup, George P., New Dorp, S. I., Richmond.
Jewett, Charles, 330 Clinton Ave., Brooklyn.
Jewett, F. A., 282 Hancock St., Brooklyn.
Johnson, Alexander B., 12 E. 58th St., Manhattan.
Johnson, John Douglas, 130 W. 104th St., Manhattan.
Johnson, Samuel M., 51 W. 9th St., Manhattan.
Johnston, Henry C., Tompkinsville, S. I., Richmond.
Jones, S. Beach, 948 Lexington Ave., Manhattan.
Joy, Homer T., 60 W. 56th St., Manhattan.
Judson, Adoniram B., 53 Washington Square, Manhattan.
Kalish, Richard, 36 W. 47th St., Manhattan.
Kammerer, Frederick, 51 E. 66th St., Manhattan.
Katzenbach, Wm. H., 17 W. 45th St., Manhattan.
Kaufmann, J., 52 E. 58th St., Manhattan.
Keller, Frederick C., 352 W. 46th St., Manhattan.
Kellogg, Edward L., 104 W. 58th St., Manhattan.
Kemp, Robert Coleman, 107 E. 57th St., Manhattan.
Kene, Joseph A., 64 Greene Ave., Brooklyn.
Kenefick, Joseph A., 27 W. 36th St., Manhattan.
Kennedy, James C., 762 Willoughby Ave., Brooklyn.
Keppler, Carl Richard, 158 W. 118th St., Manhattan.
Kerley, Charles Gilmore, 132 W. 81st St., Manhattan.
Kerrigan, Joseph A., 517 W. 149th St., Manhattan.
Kerrison, Philip D., 58 W. 56th St., Manhattan.
Kilmer, Theron W., 165 W. 85th St., Manhattan.
Kimball, Reuel B., 15 E. 41st St., Manhattan.
Kinney, Charles W., 151 W. 93d St., Manhattan.
Kinnicutt, Francis P., 39 E. 35th St., Manhattan.
Klein, William T., 712 E. 138th St., Bronx.
Knapp, Herman, 26 W. 40th St., Manhattan.
Knapp, John B., 35 W. 75th St., Manhattan.
Knapp, John Rudolph, Ward's Island, Manhattan.
Knight, Charles H., 147 W. 57th St., Manhattan.
Koplik, Henry, 692 Madison Ave., Manhattan.
Kraft, Frederick de, 148 W. 70th St., Manhattan.
Krollpfeiffer, Henry, 113 W. 118th St., Manhattan.
Krug, Florian, 13 E. 41st St., Manhattan.
Lambert, Walter Eyre, 47 W. 38th St., Manhattan.
Laporte, George L., 154 W. 119th St., Manhattan.
Lapowski, Boleslaw, 28 W. 59th St., Manhattan.
Lawrence, Enoch P., 147 Amity St., Flushing, Queens.

- Leale, Charles A., 604 Madison Ave., Manhattan.
Leale, Medwin, 1 W. 68th St., Manhattan.
Le Boutellier, William G., 45 W. 50th St., Manhattan.
Lederman, E. D., 1318 Madison Ave., Manhattan.
Lee, Burton James, 128 E. 73d St., Manhattan.
Lee, Edward Wallace, The Sydenham, 616 Madison Ave.,
Manhattan.
Lee, Elmer, 127 W. 58th St., Manhattan.
Lee, George Bolling, Hotel Somerset, 150 W. 47th St.,
Manhattan.
LeFevre, Egbert, 52 W. 56th St., Manhattan.
Lester, John C., The Sydenham, 616 Madison Ave., Man-
hattan.
Leszynsky, Wm. M., 56 E. 58th St., Manhattan.
Lewengood, Jacob, 1118 Madison Ave., Manhattan.
Lewis, Charles H., 51 W. 58th St., Manhattan.
Lewis, Robert, Jr., 48 W. 40th St., Manhattan.
Lingenfelter, H. A., 1271 Lexington Ave., Manhattan.
Livingston, Ernest P., 189 Convent Ave., Manhattan.
Lloyd, Samuel, 12 W. 50th St., Manhattan.
Lloyd, T. Mortimer, 125 Pierrepont St., Brooklyn.
Lobenstine, Ralph Waldo, 62 W. 50th St., Manhattan.
Lockwood, George Roe, Jr., 18 E. 52d St., Manhattan.
Longacre, Raymond F., 129 W. 47th St., Manhattan.
Loomis, Henry P., 58 E. 34th St., Manhattan.
Lusk, Wm. Chittenden, 47 E. 34th St., Manhattan.
Lyle, Wm. Gordon, 60 W. 58th St., Manhattan.
Mabbott, J. Milton, 19 Fifth Ave., Manhattan.
MacAlpine, Kenneth Keith, 2131 Broadway, Manhattan.
Macdonald, A. E., Columbia Court, 431 Riverside Ave.,
Manhattan.
MacLeod, Johnston, 49 So. Parsons Ave., Flushing, Queens.
Maier, Otto, 212 E. 18th St., Manhattan.
Markoe, Francis H., 15 E. 49th St., Manhattan.
May, Charles H., 698 Madison Ave., Manhattan.
Mayer, Abraham, 40 E. 60th St., Manhattan.
McChristie, William, 1058 Cauldwell Ave., Bronx.
McCollom, William, 195 Lefferts Pl., Brooklyn.
McConnell, Robert H., 42 W. 97th St., Manhattan.
McCreery, Forbes R., 123 E. 40th St., Manhattan.
McDonald, D. J., 137 E. 43d St., Manhattan.

McGovern, Martin A., 1029 Park Ave., Manhattan.
McKelway, George I., 281 Sanford Ave., Flushing, Queens.
McMaster, N. G., 669 Lexington Ave., Manhattan.
McNeilly, Robert, 309 W. 19th St., Manhattan.
McNicholl, Thomas Alex., 222 W. 136th St., Manhattan.
McParlan, John P., 1039 Madison Ave., Manhattan.
McWilliams, Clarence A., 50 E. 53d St., Manhattan.
Meara, Frank S., 400 West End Ave., Manhattan.
Meyer, Adolf, 35 Mount Morris Park, West, Manhattan.
Meyer, Willy, 700 Madison Ave., Manhattan.
Meynen, George Kissam, 43 Clinton Ave., Jamaica, Queens.
Miller, Edward, 231 E. 60th St., Manhattan.
Miller, Frank E., 22 W. 31st St., Manhattan.
Miller, J. Preston, 516 W. 149th St., Manhattan.
Minor, John C., 115 W. 73d St. (June to November, Saratoga Springs, N. Y.), Manhattan.
Minor, S. Carrington, 850 E. 165th St., Bronx.
Moeller, Henry, 341 W. 57th St., Manhattan.
Mooney, Henry W., 73 W. 50th St., Manhattan.
Moore, Clifford C., 265 W. 81st St., Manhattan.
Moore, John F., 156 W. 94th St., Manhattan.
Moore, Wm. Oliver, 31 E. 30th St., Manhattan.
Morrill, J. Lee, 63 E. 80th St., Manhattan.
Morris, Lewis Rutherford, 60 W. 58th St., Manhattan.
Morris, Robert S., 152 E. 71st St., Manhattan.
Morris, Robert T., The Sydenham, 616 Madison Ave., Manhattan.
Morrow, Benjamin R., 207 Second Ave., Manhattan.
Morse, William H., 153 E. 77th St., Manhattan.
Mortimer, W. Golden, 108 E. 81st St., Manhattan.
Morton, William J., 19 E. 28th St., Manhattan.
Moseley, C. Horace L., 929 Jefferson Ave., Brooklyn.
Mosher, Burr B., Suite 506, 44 Court St., Brooklyn.
Mulholland, Joseph A., 2582 Marion Ave., Bronx.
Munn, John P., 18 W. 58th St., Manhattan.
Murray, Francis J., 210 W. 57th St., Manhattan.
Myles, Robert C., 46 W. 38th St., Manhattan.
Nagel, Joseph Darwin, 61 W. 35th St., Manhattan.
Nagle, John T., 163 W. 126th St., Manhattan.
Nesbitt, John H., 208 W. 45th St., Manhattan.
Neumann, Louis, 459 W. 24th St., Manhattan.

- Newman, Hugh A., 330 Van Brunt St., Brooklyn.
Nichols, James Allen, 55 W. 75th St., Manhattan.
Nicoll, Henry D., 108 E. 65th St., Manhattan.
Nilsen, Jonas R., 18 W. 90th St., Manhattan.
Norris, Henry S., 10 W. 49th St., Manhattan.
Norton, Nathaniel Read, 113 E. 70th St., Manhattan.
Noyes, William B., 107 W. 69th St., Manhattan.
Oastler, Frank R., 126 W. 59th St., Manhattan.
O'Connell, Joseph J., 314 45th St., Brooklyn.
Ogilvie, James, 102 Hamilton Pl., Manhattan.
Ogilvy, Charles, 125 W. 58th St., Manhattan.
O'Grady, Cornelius E., 163 Commonwealth Ave., Van Nest,
Bronx.
O'Neil, D. Edwin, 35 W. 88th St., Manhattan.
O'Neil, Simon J., 242 Central Park West, Manhattan.
O'Neill, C. H. F., 161 W. 97th St., Manhattan.
Otis, William K., 5 W. 50th St., Manhattan.
Outerbridge, Paul E., 27 W. 74th St., Manhattan.
Owen, Henry E., 40 W. 56th St., Manhattan.
Owsley, Henry F., 259 Amity St., Flushing, Queens.
Paffard, Frederic C., 238 Clinton St., Brooklyn.
Palmer, Edmund J., 103 W. 86th St., Manhattan.
Palmer, Marvin Reed, 122 W. 49th St., Manhattan.
Patrick, Jehiel H., 67 W. 46th St., Manhattan.
Patterson, Cyrus S., 160 W. 129th St., Manhattan.
Patterson, Henry Stuart, 51 W. 58th St., Manhattan.
Peabody, George L., 57 W. 38th St., Manhattan.
Pearson, L. Walter, 401 Union St., Brooklyn.
Peck, Charles H., 30 W. 50th St., Manhattan.
Peck, Edward Sprague, 53 W. 50th St., Manhattan.
Pedersen, James, 20 E. 46th St., Manhattan.
Peet, Edward W., 348 Central Park West, Manhattan.
Pelton, Henry H., 781 Park Ave., Manhattan.
Pendleton, Judson P., 95 Sixth Ave., Brooklyn.
Perry, John G., 40 E. 26th St., Manhattan.
Peterson, Frederick, 4 W. 50th St., Manhattan.
Phillips, Wendell C., 40 W. 47th St., Manhattan.
Piffard, Henry G., 256 W. 57th St., Manhattan.
Polk, William M., 7 E. 36th St., Manhattan.
Ponce de Leon, Nestor J., 146 W. 65th St., Manhattan.
Pool, Eugene H., 57 W. 45th St., Manhattan.

Poore, Charles T., 43 W. 53d St., Manhattan.
Porter, P. Brynberg, 128 W. 84th St., Manhattan.
Porter, William H., The Strathmore, 1674 Broadway, Manhattan.
Post, Woodruff L., 2121 Bathgate Ave., Bronx.
Potter, E. Styles, 164 W. 92d St., Manhattan.
Pratt, Henry Z., 400 W. 145th St., Manhattan.
Prentiss, Robert S., 26 Stevens St., Astoria, Queens.
Price, Henry R., 1290 Pacific St., Brooklyn.
Pritchard, Wm. Broaddus, 105 W. 73d St., Manhattan.
Proben, Charles I., 970 Lexington Ave., Manhattan.
Purdy, Harry Lavinton, 110 E. 78th St., Manhattan.
Pyburn, Paul Francis, 600 Franklin Ave., Brooklyn.
Quigley, John J., 140 W. 122d St., Manhattan.
Quinlan, Francis J., 33 W. 38th St., Manhattan.
Quintard, Edward, 145 W. 58th St., Manhattan.
Rae, John Broadfoot, The Sydenham, 616 Madison Ave., Manhattan.
Raynor, Frank Cooper, 157 Clinton St., Brooklyn.
Read, Henry N., 228 Clinton St., Brooklyn.
Reese, Robert G., 58 E. 25th St., Manhattan.
Remer, John, 77 W. 126th St., Manhattan.
Rice, Clarence C., 123 E. 19th St., Manhattan.
Richards, George A., 44 W. 44th St., Manhattan.
Richardson, Alfonso A., 124 W. 111th St., Manhattan.
Richardson, Braxton B., 2057 Boston Road, Bronx.
Richy, Henry A., 161 E. 46th St., Manhattan.
Riggs, Charles E., U. S. N., Navy Yard, Brooklyn.
Roberts, Dudley D., 84 Remsen St., Brooklyn.
Robertson, Oswald D. F., 1 Madison Ave. (R. 6009), Manhattan.
Robeson, Fielding T., 325 Central Park, West, Manhattan.
Robinson, Andrew R., 159 W. 49th St., Manhattan.
Robinson, Fred C., 221 W. 11th St., Manhattan.
Roeser, Edward N., 240 W. 130th St., Manhattan.
Rose, Achilles, 126 E. 29th St., Manhattan.
Rottenberg, Ignatz Morvay, 105 W. 118th St., Manhattan.
Rudisch, Julius, 39 E. 63d St., Manhattan.
Ruppe, Ernest F., 427 W. 47th St., Manhattan.
Russell, John F., 21 W. 11th St., Manhattan.
Sachs, B., 21 E. 65th St., Manhattan.

Saril, H. Davison, 2020 Broadway, Manhattan.
Satterlee, F. LeRoy, 8 W. 18th St., Manhattan.
Satterlee, George Reese, 60 E. 78th St., Manhattan.
Satterlee, Henry S., 24 W. 45th St., Manhattan.
Satterthwaite, Thomas E., 7 E. 80th St., Manhattan.
Savage, Thomas Rutherford, 151 W. 119th St., Manhattan.
Sayre, Reginald Hall, 9 E. 45th St., Manhattan.
Scales, Jefferson, 93 Tompkins Ave., New Brighton, S. I.,
Richmond.
Schlapp, M. G., 47 E. 78th St., Manhattan.
Schley, Winfield Scott, 24 W. 45th St., Manhattan.
Schoonover, Warren, 115 E. 59th St., Manhattan.
Schulte, Hermann von W., 295 Central Park, West, Man-
hattan.
Scofield, Charles Edward, 72 Lee Ave., Brooklyn.
Scovil, Wm. Thomas, Richmond Hill, Queens.
Scratchley, Francis A., 110 E. 25th St., Manhattan.
Seaman, Louis Livingston, 247 Fifth Ave., Manhattan.
Seeligmann, Gustav, 53 E. 72d St., Manhattan.
Sellenings, Albert E., 102 E. 31st St., Manhattan.
Seward, Walter M., 55 E. 86th St., Manhattan.
Shaffer, Newton M., 28 E. 38th St., Manhattan.
Shannon, John R., 25 W. 36th St., Manhattan.
Shannon, William, 130 W. 81st St., Manhattan.
Sheedy, Bryan De F., 162 W. 73d St., Manhattan.
Sheil, Gerald, 348 Willis Ave., Bronx.
Shelby, Edmund P., 116 W. 74th St., Manhattan.
Shipley, Alfred E., 111 Halsey St., Brooklyn.
Shoop, Frederic J., 316 Cumberland St., Brooklyn.
Shufelt, W. A., The Sonoma, 55th St. and Broadway, Man-
hattan.
Silver, Henry Mann, 5 E. 43d St., Manhattan.
Silver, Lewis M., 103 W. 72d St., Manhattan.
Simmons, Charles E., 762 Madison Ave., Manhattan.
Simmons, John Gorse, Westchester Ave., between Aves. C
and D, Unionport, Bronx.
Simmons, Warren S., 338 Lafayette Ave., Brooklyn.
Simpson, William K., 952 Lexington Ave., Manhattan.
Skeel, Frank D., 58 E. 25th St., Manhattan.
Smith, A. Alexander, 18 W. 51st St., Manhattan.
Smith, Andrew H., 18 E. 46th St., Manhattan.

Smith, Daniel H., 34 W. 37th St., Manhattan.
Smith, Edward Franklin, 324 W. 46th St., Manhattan.
Smith, Ernest Ellsworth, 26 E. 29th St., Manhattan.
Smith, John Vernon, Home for Incurables, 183d St. and
Third Ave., Bronx.
Smith, Oscar G., 2304 Seventh Ave., Manhattan.
Smith, Samuel Wesley, 7 W. 26th St., Manhattan.
Smith, Thomas Allison, 57 W. 75th St., Manhattan.
Solley, Fred Palmer, 33 W. 53d St., Manhattan.
Solley, John B., Jr., 121 W. 55th St., Manhattan.
Sondern, Frederic E., 200 W. 56th St., Manhattan.
Southworth, Thomas S., 807 Madison Ave., Manhattan.
Spicer, Walter E., 315 W. 51st St., Manhattan.
Spooner, Henry G., 333 Second Ave., Manhattan.
Sprague, John T., Stapleton, S. I., Richmond.
Squier, J. Bentley, Jr., 20 E. 46th St., Manhattan.
Staack, Louis J., 412 W. 44th St., Manhattan.
Stark, Morris, 433 E. 57th St., Manhattan.
Stearns, Henry S., 45 W. 58th St., Manhattan.
Steese, Edwin S., 46 E. 57th St., Manhattan.
Stern, Heinrich, 56 E. 76th St., Manhattan.
Sternberger, Edwin, 43 E. 60th St., Manhattan.
Stevens, Charles W., 22 E. 46th St., Manhattan.
Stevenson, Clinton, 1227 Lexington Ave., Manhattan.
Stillwell, John E., 9 W. 49th St., Manhattan.
Stimson, Charles W., 68 W. 40th St., Manhattan.
Stimson, Daniel M., 28 W. 37th St., Manhattan.
Stone, William F., 340 W. 57th St., Manhattan.
Stone, William M., 63 Jamaica Ave., Flushing, Queens.
Story, C. B., Bayside, L. I., Queens.
Sturmdorf, Arnold, 51 W. 74th St., Manhattan.
Sullivan, John D., 74 McDonough St., Brooklyn.
Sully, Albert Walter, 140 E. 16th St., Manhattan.
Swift, Edwin E., 112 W. 81st St., Manhattan.
Taylor, Fielding Lewis, 173 W. 73d St., Manhattan.
Taylor, Robert W., 142 W. 48th St., Manhattan.
Terry, Charles H., 540 Washington Ave., Brooklyn.
Thomas, Allen M., 45 W. 54th St., Manhattan.
Thompson, Von Beverhout, 107 E. 60th St., Manhattan.
Thomson, Wm. H., 23 E. 47th St., Manhattan.

- Thornley, Josiah Payne, Hotel Ansonia, Broadway and 74th St., Manhattan.
- Thurber, Samuel Wood, 104 E. 39th St., Manhattan.
- Tiedemann, Frederick, 884 St. Nicholas Ave., Manhattan.
- Tilton, Benjamin T., 121 E. 38th St., Manhattan.
- Timme, Walter, 158 W. 95th St., Manhattan.
- Torek, Franz, 59 E. 60th St., Manhattan.
- Tousey, Sinclair, 43 W. 46th St., Manhattan.
- Tracy, Samuel G., 240 W. 102d St., Manhattan.
- Trask, James D., Highlands of Navesink, Monmouth Co., N. J.
- Trautman, Alexander, 369 Lexington Ave., Manhattan.
- Tucker, Carlos P., 43 W. 26th St., Manhattan.
- Tull, Edward Emory, 119 W. 80th St., Manhattan.
- Tully, Marcus E., 60 W. 76th St., Manhattan.
- Turner, Edward Payson, 24 State St., Manhattan.
- Turnure, Percy R., 55 W. 49th St., Manhattan.
- Turrell, Guy Hanford, Smithtown Branch, Suffolk Co., N. Y.
- Tuthill, Theodore K., 319 W. 18th St., Manhattan.
- Twist, Earl Bancroft, 114 E. 17th St., Manhattan.
- Tyson, Henry Hawkins, 47 W. 51st St., Manhattan.
- Valk, Francis, 164 E. 61st St., Manhattan.
- Van Brakle, James, 296 S. 5th St., Brooklyn.
- Vanderpoel, Waldron B., 262 W. 72d St., Manhattan.
- Van Etten, Nathan B., cor. Tremont and Anthony Aves., Bronx.
- Van Gieson, Ira, Willard Parker Hospital, foot of East 16th St., Manhattan.
- Van Gieson, Ransford E., 94 Kent St., Brooklyn.
- Van Loan, James C. P., 351 W. 46th St., Manhattan.
- Van Orden, Frank M., 852 E. 165th St., Bronx.
- Van Schaick, George G., 23 W. 37th St., Manhattan.
- Van Sickles, Albert M., 545 54th St., Brooklyn.
- Van Vliet, Fred, 228 W. 11th St., Manhattan.
- Varcoe, William F., 232 W. 22d St., Manhattan.
- Vedder, Harmon A., 44 E. 76th St., Manhattan.
- Vidal, Joseph Eugene, 68 Beach St., Stapleton, S. I., Richmond.

Vincent, Ludger C., 103 W. 77th St., Manhattan.
Vincent, Wesley Grove, 172 W. 79th St., Manhattan.
Vineberg, Hiram N., The Sydenham, 616 Madison Ave.,
Manhattan.
Virgin, Frederic O., 251 Lenox Ave., Manhattan.
Von Glahn, John, 82 W. 12th St., Manhattan.
Von Ramdohr, C. A., 45 Irving Pl., Manhattan.
Waechter, Adolph, 216 E. 12th St., Manhattan.
Wagner, Edward, 331 Second Ave., Manhattan.
Wainright, Charles F., The Sydenham, 616 Madison Ave.,
Manhattan.
Waitzfelder, Edward, 209 W. 22d St., Manhattan.
Wakefield, Homer, 501 W. 120th St., Manhattan.
Walker, John B., 39 E. 33d St., Manhattan.
Walser, William C., Livingston, S. I., Richmond
Walther, L., 838 Lexington Ave., Manhattan.
Ward, Edwin F., 15 W. 96th St., Manhattan.
Warford, George T., 132 W. 82d St., Manhattan.
Waters, Bertram H., 22 E. 46th St., Manhattan.
Watkins, Robert L., 20 W. 34th St., Manhattan.
Watts, Robert, 45 W. 36th St., Manhattan.
Watts, Robert, Jr., 111 E. 35th St., Manhattan.
Waugh, Darwin W., 388 Clinton St., Brooklyn.
Weber, Leonard, 25 W. 46th St., Manhattan.
Weber, Leonard G., 624 Lexington Ave., Manhattan.
Weeks, John E., 46 E. 57th St., Manhattan.
Weiher, Charles L., 112 E. 76th St., Manhattan.
Weil, Richard, 163 W. 86th St., Manhattan.
Weir, Robert Fulton, 30 W. 50th St., Manhattan.
Weismann, Francis H., 218 E. 17th St., Manhattan.
Welker, Franklin, 344 W. 145th St., Manhattan.
Westbrook, Richard Ward, 1145 Dean St., Brooklyn.
Wheeler, Edward A., 110 Ross St., Brooklyn.
Wheelwright, Joseph S., 50 E. 53d St., Manhattan.
White, John Blake, 1013 Madison Ave., Manhattan.
White, John J., 2148 Fifth Ave., Manhattan.
White, William A., 461 W. 43d St., Manhattan.
Whiting, Charles Allen, 70 W. 47th St., Manhattan.
Wilcox, Reynold Webb, 679 Madison Ave., Manhattan.
Willard, Thomas H., 1 Madison Ave., Manhattan.
Williams, Herbert F., 197 Gates Ave., Brooklyn.

Williams, Mark H., 116 W. 129th St., Manhattan.
Wilson, Arthur S., 120 E. 34th St., Manhattan.
Wilson, Frederic N., 106 W. 47th St., Manhattan.
Winters, Joseph E., 25 W. 37th St., Manhattan.
Wood, John Scott, 172 Sixth Ave., Brooklyn.
Wood, J. Walter, Port Richmond, Richmond.
Wood, Philip M., 443 Fulton St., Jamaica, Queens.
Worster, Willard Parker, 535 W. 111th St., Manhattan.
Wunderlich, Frederick W., 165 Remsen St., Borough of Brooklyn.
Wyckoff, Peter B., 23 W. 57th St., Borough of Manhattan.
Wylie, Robert Hawthorne, 72 W. 52d St., Manhattan.
Wylie, W. Gill, 28 W. 40th St., Borough of Manhattan.
Wynkoop, Daniel Woodbury, 128 Madison Ave., Manhattan.
Wynkoop, Gerardus H., 128 Madison Ave., Manhattan.
Young, John Van Doren, 143 W. 86th St., Manhattan.
Young, William E., The Sydenham, 616 Madison Ave., Manhattan.
Ziegel, H. Fred, 201 W. 120th St., Manhattan.
Zimmerman, Edwin, 297 W. 11th St., Manhattan.

Deceased Fellows

June 12, 1905, to June 11, 1906.

FREDERICK TEMPLETON ZABRISKIE,
Borough of Manhattan
DIED NOVEMBER 5, 1905.

EMMET COOPER DENT, - Borough of Manhattan
DIED JANUARY 12, 1906.

WILLIAM E. SWAN, - Borough of Manhattan
DIED FEBRUARY 4, 1906.

GEORGE RYERSON FOWLER,
Borough of Brooklyn
DIED FEBRUARY 6, 1906.

THE DEATH OF DR. WARREN SCHOONOVER, JR.

At a stated meeting of the Association held November 13, 1905, the following report was presented and adopted:

Dr. Warren Schoonover, Jr., son of Dr. Warren Schoonover, a highly respected physician of large practice in this city, was born in New York June 15, 1873. He entered the College of the City of New York, and remained during the Freshman year. The following year he entered Union College as a Sophomore, but, after a tedious convalescence from enteric fever, he thought best to commence the study of medicine; being graduated as M. D. by the Bellevue Hospital Medical College in 1897.

In March, 1898, he was appointed physician to the Northeastern Dispensary, and he remained in this service until his death. He was a member of the New York County Medical Society, the Kings County Medical Society, the Medico-Surgical Society, and the Medical Association of the Greater City of New York. He was an occasional contributor to the medical journals, and for a short time was a department editor of the *Medical Critic*. In October, 1897, he became an assistant in the clinic of Professor Wilcox at the New York Post-Graduate Medical School and Hospital, and in May, 1903, was promoted to the post of Instructor in Medicine. He married, in 1903, Miss Anna E. Reinack, who survives him. He died at his father's residence on June 12, 1905, from acute tuberculosis.

As a teacher Dr. Schoonover held his class by his practical instruction and forceful demonstrations; as a physician in charge of his clinic he commanded the respect of his patients by his skill and his kindly interest in their welfare; as a practitioner he was beloved for his genial nature and modest bearing. Those who had known him best and longest feel most keenly the loss sustained in his untimely death.

REYNOLD WEBB WILCOX,
P. BRYNBERG PORTER,
F. C. RAYNOR,

Committee.

THE DEATH OF DR. FREDERICK T. ZABRISKIE.

At a stated meeting of the Association held December 11, 1905, the following report, presented by the Corresponding and Statistical Secretary, was ordered to be entered on the minutes and published in the Year Book:—

Dr. Frederick Templeton Zabriskie, of Manhattan, a Fellow of this Association since January, 1902, died suddenly on November 5, at the age of thirty-four years. His death was due to heart failure following pneumonia, from which he had been ill for a week. Dr. Zabriskie was graduated from the College of Physicians and Surgeons, New York, in 1895. In recent years he devoted much of his time to work in Lenox and Pittsfield, and at the time of his death was on the staff of the House of Mercy at Pittsfield.

THE DEATH OF DR. EMMET C. DENT.

At a stated meeting of the Association held March 12, 1906, the following report was presented and adopted:

It is with profound regret that your Committee record the death of Dr. Emmet Cooper Dent, a Fellow of this Association.

Dr. Dent was born in Macon, Miss., in 1857. He began the study of medicine at the University of Virginia, and completed his course at Bellevue Hospital Medical College, New York, in 1879. He was thereupon appointed on the medical staff of the New York City Lunatic Asylum, on Blackwell's Island. He was promoted to the office of Assistant Medical Superintendent in December, 1886. In February, 1896, Dr. Dent was transferred to Ward's Island, where he served as Superintendent of the Female Department of the Manhattan State Hospital. On June 1, 1905, the two departments were consolidated, and he was made Superintendent and Treasurer of the entire hospital, an institution of more than 4,000 beds—the largest and most modern of its kind in the whole country.

To Dr. Dent is due the credit for many advances in the care and treatment of the insane. He was the first to introduce and develop hydrotherapy as a means of treatment in such cases, almost to the entire exclusion of medicine. He also introduced camp life for the acute insane, and the use of music and of special diversions, dancing, outdoor sports, and other amusements. He developed the continuous bath to its greatest efficiency. He advocated advanced surgical care and treatment, and operative procedures, especially on the female insane. Under his administration clinics were introduced in psychiatry, gynaecology, surgery, heart disease, genito-urinary diseases, and gastrointestinal diseases, and investigations into epilepsy, paresis and auto-infection were instituted.

He was the author of numerous articles on insanity. He personally gave many clinical lectures on the various types and manifestations of insanity, and organized his staff of

thirty physicians into a society for the advanced study of psychiatry. He devoted his life to the study of insanity and to the care and treatment of the insane, and for this unfortunate class he sacrificed every personal interest. A wife and two daughters survive him.

Whereas, Death has suddenly removed from our midst our fellow member, whose example of unselfish devotion to duty and whose exceptional administrative ability excite our admiration, and whose sterling character and urbanity made him dear to all who knew him; therefore be it

Resolved, That we extend to the bereaved family our heartfelt sympathy in their grief, and the assurance that his memory will ever be cherished by us; and be it further

Resolved, That these resolutions be entered on our minutes and a copy sent to the family.

ROBERT COLEMAN KEMP,
HERMAN C. EVARTS,
ACHILLES ROSE,
Committee.

THE DEATH OF DR. WILLIAM E. SWAN.

At a stated meeting of the Association held March 12, 1906, the following report was presented and adopted:

Dr. William E. Swan was born in Corinth, Saratoga County, N. Y., and died February 4, 1906, at thirty-nine years of age. The cause of his death was sarcoma of the mediastinum. He was graduated from Gates Private School in Saratoga, after which he entered the College of Physicians and Surgeons in 1886, graduating from there in 1890. He then associated himself with Dr. C. S. Grant of Saratoga Springs, with whom he practiced for three years. He maintained an independent practice for three years more, when, prompted by a desire to perfect himself in his profession, he went to Johns Hopkins and studied under Dr. William S. Halsted. He then took the examinations on Dr. Howard Kelley's service, remaining with him for two years as Assistant House Surgeon. After this he went abroad for two years, studying at Leipsic, Heidelberg and Vienna—most of the time being spent in Leipsic. He had acquired a knowledge of the German language while at Johns Hopkins. After his return home he was appointed Attending Gynæcological Surgeon to the Saratoga Hospital, and within the next year Consulting Gynæcologist at the Strong Sanitarium, Saratoga. He was very successful in his work, and after three years had a large practice. Feeling the desire for a larger field in special work, he came to New York City, and was made Instructor in Diseases of Women in the Post-Graduate Medical School and Hospital and in the Gynæcological Department of the College of Physicians and Surgeons. His ideals in medicine were unusually high, and his ambition was to do thoroughly scientific medical work. During his stay in New York he made many friends by the high character of his work and his conscientious devotion to his duties.

The Medical Association of the Greater City of New York has learned with the deepest regret of the death of its Associate, Dr. William E. Swan. Although resident in

New York only a little over a year, Dr. Swan, by his attractive personality, his conscientious attention to his professional duties, and his high scientific ideal, endeared himself to those with whom he came in contact.

It is recommended by your Committee that the sympathy of the Society be extended to his sisters and that this note be entered on the minutes.

SAMUEL LLOYD,
HERMAN J. BOLDT,
Committee.

THE DEATH OF DR. GEORGE R. FOWLER.

At a stated meeting of the Association held April 9, 1906, the following report was presented and adopted:

The death of our distinguished fellow member, Dr. George Ryerson Fowler, has been felt by us all, not only as a personal loss, but a loss to the ranks of able and progressive surgeons.

He had lived and worked long enough to establish his rank. He was among that small class of ceaselessly active, thoroughly grounded, splendidly trained, and self-disciplined surgeons who have reached a time of life where every act tells for good. He would have disdained to be considered in a class by himself, but, rather, regarded it as his greatest privilege and noblest duty to work shoulder to shoulder with his comrades in science.

Those who knew him best as a teacher loved and venerated his wise and experienced words.

Those who watched his surgical work noted his originality and unerring correctness of action.

Those who knew him as a man saw, throughout his life, devotion to principle and quick response to every call of duty, regardless of personal sacrifice. Never considering himself first, he served not only his profession, but his school, his State, and his country.

His personal qualities of buoyancy, modesty and truthfulness excited a pleasant interest in all his public utterances. Never speculative, but, on the contrary, eminently practical, he was always fearless and ready with his pen. With his views fully matured, his writings ever rang true, and bore the stamp of large experience tempered by unusual wisdom.

Those who were fortunate enough to be associated with him in hospital work found him unceasingly watchful of details in his operating room and a most severe teacher of strict asepsis.

His influence on the surgical work of his generation will stand among that of the strongest men of the time. As was written on the tomb of Charles Wesley in Westminster, "God buries his workmen, but continues his work."

ROBERT ABBE,
CHARLES JEWETT,
ROBERT T. MORRIS,
Committee.

PAPERS READ BEFORE THE ASSOCIATION.

- ABBE, R.—Intestinal Obstruction Following Operations for Appendicitis. *December, 1905.*
—Value of Radium in Surgery. *March, 1906.*
- ALDERTON, H. A.—A Symptom Indicating the Probable Development of Mastoiditis, and the Necessity for Early Operation. *October, 1902.*
- ALLEMAN, L. A. W.—Retinal Findings, with Cerebral Concussion. *June, 1901.* (*American Medicine, 1901.*)
- ANDERS, J. M.—Prophylaxis of Pneumonia.* *December, 1905.* (*American Medicine, March 31, 1906.*)
- ARROWSMITH, H.—The Accessory Sinuses. *January, 1906.*
- AYRES, W.—Lavage of the Renal Pelvis in the Treatment of Bright's Disease. *March, 1905.*
- BALDWIN, L. G.—A Case of Properitoneal (Interstitial) Hernia. *January, 1900.* (*Medical Record, Jan. 20, 1900.*)
- BARUCH, S.—Hydrotherapy for Typhoid Fever in Private Practice. *October, 1900.*
- BECK, C.—The Operation for Hypospadias, with the Demonstration of Three Cases Successfully Treated by the Forward Dislocation of the Urethra. *October, 1900.* (*N. Y. Med. Journal, Dec. 8, 1900.*)
—The X-Ray in Surgical Diagnosis. *March, 1906.*
- BENNETT, T. L.—Chloroform Syncope and Its Treatment. *May, 1903.* (*Medical News.*)
- BERG, A. A.—Remarks on Subphrenic Abscess, with Report of Three Cases and Presentation of Patient. *October, 1899.*
—The Indications for Surgical Interference in Cholelithiasis. *October, 1899.*
—Perforated Gastric and Duodenal Ulcers, with Report of Four Cases Treated by Operation. *March, 1903.* (*Medical Record, 1903.*)

* Read by invitation.

- BERG, H. W.—Glio-Sarcoma of the Base of the Brain. Pressing Upon and in Front of the Left Lobe of the Cerebellum, with Remarks on the Localization of Cerebellar Disease. *May, 1900.* (*Mount Sinai Hospital Reports, 1901.*)
- Clinical and Other Features of the Present Epidemic of Cerebro-Spinal Meningitis. *June, 1904.* (*N. Y. Medical Journal and Philadelphia Med. Journal Consolidated.*)
- The Present Limitations of Serum Therapy. *April, 1905.* (*Medical Record, May 6, 1905.*)
- What Has Surgery Left to Medicine in the Treatment of Peritonitis? *April, 1906.* (*Medical Record, June, 1906.*)
- BISHOP, L. F.—Relation of Clinical Pathology to Actual Practice. *November, 1905.* (*Boston Med. and Surg. Journal, Dec. 21, 1905.*)
- BLAKE, J. A.—The Operative Treatment of Umbilical Hernia in Adults. *January, 1901.* (*Medical Record, May 25, 1901.*)
- BOZEMAN, N. G.—Counter-opening in the Vagina for Artificial Bladder Drainage. *April, 1904.*
- BRADLEY, C. C.—Trachoma in Children. *May, 1905.*
- BRANNAN, J. W.—The Treatment of Diphtheria as Carried Out in the Willard Parker Hospital. *April, 1900.*
- BRANTH, J. H.—Demonstration of Two Cases of Extrophy of the Bladder, with Suggestions for a New Operation. *June, 1899.* (*Medical Record, Sept. 16, 1899.*)
- Case of Excision of the Elbow Joint Followed by a False Joint with Restored Function of Arm. *June, 1899.*
- The Growth of New Bone from Periosteum. *June, 1901.* (*N. Y. Med. Journal.*)
- Roentgen Rays in the Treatment of Cancerous and Skin Affections and of Epilepsy and in Diagnosis. *January, 1904.* (*N. Y. Med. Journal and Philadelphia Med. Journal, Consolidated, June 11, 1904.*)

- BRISTOW, A. T.—Recent Advances in Intestinal Surgery.* *April, 1906.*
- BRUSH, A. C.—Professional Responsibility in the Diagnosis and Care of the Insane. *January, 1905.* (*American Medicine.*)
- Study of Seventy Cases of Brain Tumor. *May, 1906.* (*Medical Record.*)
- BUTLER, G. R.—The Treatment of Lobar Pneumonia, *November, 1903.* (*Transactions Amer. Climatological Association, 1903.*)
- Prophylaxis and Medical Treatment of Diseases of the Pancreas. *February, 1904.* (*Medical News, May 21, 1904.*)
- CAILLE, A.—Cow's Milk for Infant Feeding.* *June, 1904.*
- CANNON, W. B.—The Mechanics of Some Digestive Processes.* *October, 1905.*
- CHAPIN, H. D.—Epidemic Poliomyelitis in Children.* *March, 1900.*
- The Heart and Circulation in Diphtheria.* *April, 1900.*
- CHITTENDEN, R. H.—Importance of a Study of Nutrition* *October, 1905.* (*American Medicine, Nov. 11, 1905.*)
- COE, H. C.—The Induction of Premature Labor. *March, 1902.*
- COLEY, W. B.—Acute Traumatic Malignancy, with a Report of Cases. *November, 1900.* (*Medical News, April 13 and 20, 1901.*)
- Value of the X-Ray in Cancer, *March, 1906.*
- CORNING, J. L.—The Neuro-Physiological Aspect of Spinal Anæsthesia. *December, 1900.* (*Med. Review of Reviews, 1901.*)
- Neurological Aspects of Anæsthesia. *June, 1903.*
- CRAGIN, E. B.—Metorrhagia Due to Inflammatory Processes Within the Pelvis. *February, 1901.*

* Read by invitation.

- CROOK, J. K.—The Early Diagnosis of Pleuritic Effusions. *November, 1901.* (*Medical News, April 12, 1902.*)
- DEAVER, JOHN B.—The Surgical Treatment of Pancreatic Diseases.* *February, 1904.* (*American Medicine, March 19, 1904.*)
- DESSAU, S. H.—The Therapeutic Value of the Internal Use of Carbolic Acid. *June, 1902.*
—Treatment of Scarlet Fever. *May, 1904.*
- DICKINSON, R. L.—Time-Saving and Labor-Saving Devices in the Office Work of Surgeon and Gynaecologist. *June, 1902.* (*Medical Record.*)
- DUEL, A. B.—Operative Interference in Diseases of the Ear in Children: Its Limitations. *May, 1905.*
- DUNHAM, E. K.—Introductory on Immunity.* *April, 1905.*
- EDEBOHLS, G. M.—Renal Decapsulation for Chronic Bright's Disease. *February, 1903.* (*Medical Record, March 28, 1903.*)
- EDGAR, J. C.—The Causes and the Significance of the Obstetric Hemorrhages. *February, 1901.* (*American Gynaecological and Obstetrical Journal, April, 1901.*)
- EINHORN, M.—A New Æsophagoscope. *December, 1901.* (*Medical Record, Jan. 25, 1902.*)
—A New Method of Testing the Motor Power of the Intestines. *October, 1902.*
- FISHER, E. D.—Myelitis: Its Rarity Outside of Traumatic Conditions. *March, 1900.*
—Aphasia. *May, 1906.*
- FLEXNER, S.—Infection with the Bacillus of Dysentery, with Especial Reference to Its Rôle in the Summer Diarrhoeas of Children.* *October, 1902.*
- FLINT, A.—~~Inaugural Address.~~ *October, 1902.*
- FOLIN, O.—A Theory of Protein Metabolism.* *October, 1905.* (*N. Y. Med. Journal, March 3, 1906.*)

* Read by invitation.

- FOWLER, G. R.—Spinal Analgesia in General Surgery—
A Study of Eighty-one Cases Operated Upon
Under Analgesia Obtained by Subarachnoid
Spinal Cocainization. *December, 1900.* (*Medical News, Jan. 5, 1901.*)
- FREUDENTHAL, W.—Some of the European Sanatoria
for Consumptives, and the Final Aims of
Phthisisotherapy. *December, 1899.* (*Medical News, Feb. 24, 1900. Von Leyden's Zeitschrift für Tuberkulose, 1901.*)
- The Indications for Operative Interference in Tu-
berculous Growths in the Larynx. *March,*
1902.
- Recent Advances in the Therapeutics of Diseases
of the Upper Air Passages. *January, 1906.*
(*Critic and Guide, May and June, 1906.*)
- GABRIEL, M. S.—Presentation of Specimens of Vesical
Calculi, with Remarks. *June, 1899.*
- GALLANT, A. E.—The Puerpera: Her Care and Comfort
During Convalescence. *December, 1903.*
(*American Medicine, May 14, 1904.*)
- Postpartum Tubo-ovarian Abscess Causing Hy-
dronephrosis. *December, 1903.* (*Medical News, May 28, 1904.*)
- GANT, S. G.—Fistula in Ano: Its Relation to Phthisis.
June, 1900.
- The Non-Medicinal Treatment of Constipation.
April, 1903. (*Med. Record.*)
- Sterile Water Anæsthesia in the Office Treatment
of Rectal Diseases. *December, 1903.* (*N. Y. Med. Journal and Phila. Med. Journal Consolidated, Jan. 23, 1904.*)
- Appendicostomy for the Relief of Chronic Diarr-
hoea.—Report of Nine Cases. *June, 1905.*
- GARDNER, A. W.—Experimental Researches on Resusci-
tation After Death from Chloroform. *May,*
1903. (*N. Y. Med. Journal.*)
- GILLETTE, C. E.—Filtration of Public Water Supplies.*
February, 1906. (*Medical Record, March 24,*
1901.)

* Read by invitation.

- GOLDAN, S. O.—Intra-Spinal Cocainization from the Anæsthetist's Standpoint. *December, 1900.* (*N. Y. Med. Journal, Dec. 22, 1900.*)
- Anæsthetization as a Specialty: Its Present and Future. *March, 1901.* (*American Medicine, 1901.*)
- Relation of the Anæsthetist to the Patient and to the Surgeon. *June, 1903.* (*N. Y. Med. Journal.*)
- GUITERAS, R.—The Treatment of Urethral Strictures. *January, 1902.*
- GWATHMEY, J. T.—Gas-Ether Inhaler. *June, 1903.*
- HARE, H. A.—Treatment of Pneumonia.* *December, 1905.*
- HARRINGTON, C.—Public Water Purification in Massachusetts.* *February, 1906.* (*Medical Record, March 24, 1906.*)
- HAVARD, V.—Is Mortality Necessarily Higher in Tropical Than in Temperate Climates? *October, 1904.* (*American Medicine, Jan. 7, 1905.*)
- Ration of the Russian and Japanese Soldiers in the Field, and Its Effect Upon Their Health and Efficiency. *October, 1905.*
- HEITZMANN, L.—Some Errors in the Examination of Urine. *November, 1900.* (*Medical News, April 20, 1901.*)
- Recent Advances in Urinology. *November, 1905.* (*Boston Med. and Surg. Journal, Dec. 21, 1905.*)
- HEMMETER, J. C.—Advances in the Physiology of the Pancreas and Their Application to the Diagnosis of Diseases of the Pancreas.* *February, 1904.*
- Introductory to Discussion on Indications and Methods in Diseases of the Intestines and Peritoneum.—Comparison of the Results of the Treatment of Peritoneal Tuberculosis by Surgery and by the Conservative Method. *April, 1906.*

*Read by invitation.

HEPBURN, N. J.—Cocaine Anæsthesia in Eye Affections.
January, 1901.

ILLOWAY, H.—The Importance of Proper Dietary Regimen in the Treatment of Heart Affections.
An Attempt to Formulate Rules Therefor.
March, 1901. (American Journal of the Med. Sciences, March, 1902.)

—The Prophylaxis of Appendicitis. *November, 1902.*
(*N. Y. Med. Journal, Feb. 21, 1903.*)

KELLY, H. A.—The Treatment of Pyelitis.* *March, 1905. (Medical Record, April 8, 1905.)*

KEMP, R. C.—Experimental Researches on Resuscitation After Death from Chloroform. *May, 1903.*
(*N. Y. Med. Journal.*)

—Dilatation of the Stomach and Gastrophtosis.
March, 1904. (Medical News.)

—Mucous Colic. *December, 1904. (American Medicine, March 4, 1905.)*

—Relations of the Gastro-intestinal Tract to Nervous and Mental Diseases. *June, 1906. (Boston Med. and Surg. Journal.)*

KERLEY, C. G.—Symptomatology of Acute Otitis in Children. *May, 1905. (N. Y. Med. Journal and Phila. Med. Journal.)*

KINNICUTT, F. P.—Treatment of the Uræmic State.
March, 1903.

LEDERLE, E. J.—Problems of the Public Water Supply of New York City.* *February, 1906.*

LEE, E. W.—Personal Experience Regarding Anæsthetics.
June, 1903. (N. Y. Med. Journal.)

LEE, E.—Food as a Factor in the Causation of Disease.
April, 1901.

LILIENTHAL, H.—Remarks on the Surgical Aspects of Dr. H. W. Berg's Case of Glio-Sarcoma of the Base of the Brain. *May, 1901. (Mount Sinai Hospital Reports, 1901.)*

* Read by invitation.

- LOCKWOOD, G. R., JR.—Dilatation of the Stomach.
March, 1904.
- LOOMIS, H. P.—Present Treatment of Pneumonia as
Exemplified by the Routine Treatment of the
Disease in Four of the Large New York Hos-
pitals. *December, 1905.* (*Therapeutic Ga-
zette, Feb. 15, 1906.*)
- LUSK, G.—Fixed and Definite Quality of Food Energy
Required for the Proper Performance of the
Life Functions.* *October, 1905.*
- MABBOTT, J. M.—Asepsis and Antisepsis in Obstetrics;
also, "Sterile Gauze" and "Sterile Water."
February, 1905. (*N. Y. Med. Journal and
Phila. Med. Journal, April 8, 1905.*)
- MARKS, S.—Obstetrical and Gynæcological Aspect of
Spinal Anæsthesia.* *December, 1901.*
- MARSHALL, H. T.—Therapeutic Value of Antitoxic
Sera.* *April, 1905.* (*N. Y. State Journal of
Medicine.*)
- McWILLIAMS, C. A.—Resection of Twenty-three Inches
of Gangrenous Intestine Due to a Volvulus
Following a Second Attack of Appendicitis.
Report of Thirty-three Cases of Intestinal Ob-
struction Caused by Unoperated Appendicitis.
December, 1904. (*N. Y. Med. Journal and
Phila. Med. Journal, Feb. 25 and March 4,
1905.*)
- MENDEL, L. B.—Distinctive Features of Animal and
Vegetable Dietaries.* *October, 1905.* (*Ameri-
can Medicine, Nov. 11, 1905.*)
- MORRIS, R. T.—Surgical Treatment of Hepatic Cirr-
hosis. *November, 1904.*
- MORTON, W. J.—Radiotherapy for Cancer and Other
Diseases. *April, 1902.* (*Medical Record,
May 24, 1902.*)
- MULLER, G. P.—Pathology of Pancreatic Diseases.* *Feb.
ruary, 1904.* (*American Medicine, March 19,
1904.*)

* Read by invitation.

- MUSSER, J. H.—The X-Ray in Medicine.* *February, 1906.*
- NOYES, W. B.—A Case of Cerebral Concussion and Hystero-Epilepsy. *June, 1901.*
- OPIE, E. L.—Phagocytosis in Its Relation to Immunity.* *April, 1905.*
- OSBORNE, O. T.—The Significance of Variations in the Internal Secretions.* *December, 1902.* (*Medical News, April 4, 1903.*)
- PEARCE, R. M.—Experimental Pancreatitis Considered in Its Relation to the Acute Forms of Pancreatitis in Man.* *February, 1904.* (*American Medicine, May 28, 1904.*)
- PEASE, H. D.—Therapeutic Value of Bacterial Sera.* *April, 1905.* (*American Medicine.*)
- PETERSON, F.—What the State of New York is Doing for the Insane and for the Advancement of the Science of Medicine. *January, 1905.* (*Medical News, April 22, 1905.*)
- PHELPS, A. M.—The Etiology, Pathology and Treatment of Joint Diseases. *May, 1902.*
- PILCHER, L. S.—The Radical Relief of Urinary Obstruction Due to Prostatic Hypertrophy.* *June, 1905.*
—The Surgery of the Peritoneum.* *April, 1906.*
- PORTER, W. H.—The Right and Wrong Use of Digitalis Based on Cardiac Pathology. *December, 1901.* (*Medical News, May 3, 1902.*)
—The Constitutional Treatment of Bright's Disease. *March, 1905.* (*The Post-Graduate, April, 1905.*)
- POTTER, E. S.—Supra-Scrotal Operation for Varicocele, with Ligature of the Spermatic Artery. *March, 1903.* (*N. Y. Med. Journal, May 2, 1903.*)
- POWELL, J. L.—Mosquitoes and Malaria.* *October, 1904.*

* Read by invitation.

- RAYNOR, F. C.—Hypertrophy of the Pharyngeal and Faucial Tonsils. *January, 1906.* (*American Journal of Surgery, May, 1906.*)
- ROCKWELL, A. D.—X-Ray Therapy. *March, 1906.* (*Medical Record, April 21, 1906.*)
- ROSE, A.—The Therapeutical Application of Carbonic Acid Gas. *November, 1899.* (*N. Y. Med. Journal, Jan. 6 and 13, 1900.*)
—Gastrophtosis. *March, 1904.* (*Medical News, July 16, 1904.*)
—Mucous Colic and Gastropsia. *December, 1904.* (*American Medicine, March 4, 1905.*)
- SANDS, R. A.—The Etiology and Treatment of Acne Vulgaris. *January, 1900.*
—The Treatment of Ordinary Forms of Loss of Hair. *November, 1902.*
- SARIL, H. D.—On the General Aspects of Corneal Astigmatism. *November, 1901.*
- SATTERTHWAITE, T. E.—The Treatment of Cardiac Affections. *December, 1901.* (*The Post-Graduate, January, 1902.*)
—Inaugural Address; Introduction to Discussion on Pancreatic Diseases. *February, 1904.* (*The Post-Graduate, July, 1904.*)
—President's Address. *January, 1906.*
- SAVAGE, T. R.—Remarks on Symphyseotomy, with Report of Three Cases. *November, 1899.*
- SEAMAN, L. L.—Disastrous Effects of Improper Diet. *October, 1905.*
- SHOEMAKER, J. V.—Tropical Malaria.* *October, 1904.* (*Medical News, Dec. 17, 1904.*)
- SMITH, A. H.—Uterine Hemorrhages Due to Organic Diseases in Other Organs and to Constitutional Disturbances. *February, 1901.*
—Inaugural Address. *February, 1902.*
—Specific Medication. *February, 1902.* (*Med. Record, March 15, 1902.*)

* Read by invitation.

- Vacation Jottings; Medical Observations at the International Medical Congress at Madrid, and Elsewhere in Europe. *October, 1903.* (*Med. Critic, October, 1903.*)
- Farewell Address. *February, 1904.*
- Pathological History of Pneumonia. *December, 1905.*
- SMITH, E. E.—Laboratory Aids in the Diagnosis of Disorders of the Gastro-intestinal Tract. *November, 1905.* (*Boston Med. and Surg. Journal, Dec. 21, 1905.*)
- SMITH, H. E.—Sewage in Its Relation to Health.* *February, 1906.*
- SONDERN, F. E.—Present Attitude of Blood Examination for Diagnostic Purposes. *November, 1905.* (*Boston Med. and Surg. Journal, Dec. 21, 1905.*)
- SOPER, G. A.—Ultimate Disposal of Sewage.* *February, 1906.*
- SPOONER, H. G.—The Bladder in Health and Disease, as Demonstrated by the Cystoscope. (*Med. Record, April 16, 1904.*)
- STARK, M.—Universal Inhaler. *June, 1903.*
- STERN, H.—Lupulin in the Treatment of Gastro-intestinal Diseases. *June, 1906.*
- STOCKTON, C. G.—Classification and Symptomatology of Diseases of the Pancreas.* *February, 1904.* (*Medical News, May 21, 1904.*)
- STURMDORF, A.—Perineum, Perineorrhaphy and Pro-lapse. *February, 1905.* (*Medical Record, April 1, 1905.*)
- SWAIN, H. L.—Indications for Treatment in Acute Disease of the Accessory Sinuses.* *January, 1906.*
- SYMS, P.—Perineal Prostatectomy by an Original Technique.* *June 12, 1905.*

* Read by invitation.

- TAYLOR, J. M.—Rôle of Saline Solution in the Treatment of Pneumonia.* *December, 1905.* (*Medical Record, Jan. 13, 1906.*)
- THOMSON, W. H.—Cholelithiasis: Its Diagnosis and Treatment. *October, 1901.* (*N. Y. Med. Journal, March 1, 1903.*)
—Uræmia and Its Treatment. *January, 1903.* (*Medical Record, May 16, 1903.*)
- TOUSEY, S.—Relation of X-Ray and Radio-active Solutions to Examination of the Stomach. *March, 1904.*
—Treatment of Tuberculosis of the Larynx and Prostate by the X-Ray, High-Frequency Currents, and the Cooper-Hewitt Light. *April, 1904.*
- VAN GIESON, I.—Rabies and Its Treatment. *May, 1906.*
- VAN GIESON, R. E.—Serious Vomiting of Pregnancy. *June, 1902.*
—Infant Feeding and Milk Modification. *June, 1904.* (*Medical News.*)
- WEBER, L.—The Medical Treatment of the Acute Attack and the Management of Chronic Gallstone Disease, with Special Reference to Cases Without Icterus. *October, 1901.* (*Medical News, 1901.*)
—Endocarditis and Its Treatment. *December, 1901.* (*N. Y. Med. Journal, 1902.*)
—A Case of Intestinal Obstruction from Old Adhesions. *November, 1904.* (*The Post-Graduate, May, 1905.*)
—Cirrhosis of the Liver. *November, 1904.*
- WEEKS, J. E.—Eczematous Affections of the Eye in Children. *May, 1905.*
- WEIR, R. F.—Remarks on the Formation of an Artificial Anus. *February, 1900.* (*Medical Record, April 21, 1900.*)

* Read by invitation.

WELLS, B. H.—The Gynæcologist and the General Surgeon: Their Respective Fields.* *February, 1905. (American Medicine, May 6, 1905.)*

WHITE, J. B.—The Diagnosis and Treatment of Diphtheria. *April, 1900. (Pediatrics, Vol. X., No. 2, 1900.)*

—Encysted Empyema, with Report of Four Cases Resulting in Perforation of the Lung Successfully Operated Upon. *November, 1901.*

WILCOX, R. W.—Internal Antisepsis. *May, 1900. (Medical News, Oct. 6, 1900.)*

—Hydrophobia and that Sort of Thing. *October, 1903. (Med. Brief, July and August, 1904.)*

—Some Questions in the Diagnosis of Pneumonia. *December, 1905.*

WILEY, H. W.—Proper Diet for the Tropics.* *October, 1904. (Interstate Med. Journal, St. Louis.)*

—Influence of Preservatives and Coloring Matters and Their Relation to Nutrition.* *October, 1905. (American Medicine, Nov. 25, 1905.)*

WILLIAMS, H. F.—The Medical Treatment of Cholelithiasis and Its Limitations. *October, 1901.*

—The Treatment of Lobar Pneumonia. *November, 1903.*

WOLFF, A. J.—Diphtheria Antitoxin in Cerebro-Spinal Meningitis.* *April, 1905. (American Medicine, May 13, 1905.)*

WYLIE, W. G.—Report of Case in which an Artificial Anus Was Made, with Remarks. *February, 1900.*

* Read by invitation.

THE SCIENTIFIC PROCEEDINGS OF THE ASSOCIATION FROM OCTOBER, 1905, TO JUNE, 1906, INCLUSIVE.

Stated Meeting, October 9, 1905.

The evening was devoted to the general subject of
FOODS AND NUTRITION.

INTRODUCTORY.—THE IMPORTANCE OF A STUDY OF NUTRITION.

PROFESSOR RUSSELL H. CHITTENDEN, Director of the Sheffield Scientific School, Yale University, read the first paper, on this topic. He was glad, he said of the opportunity of making a plea for the broader and more thorough study, along scientific lines, of the subject of nutrition. As medical writers state, with truth, that the majority of diseases are due to disturbances of nutrition, to perversions of metabolism, we certainly need as full and complete knowledge as it is possible to obtain of all the varied processes of nutrition in order to be able to correct those deviations from the normal which we characterize as disease. Observation points to the widespread use of methods and treatment which tend to temporary alleviation, rather than the radical cure of disease by bringing back the body to a normal state of nutrition. Prevention is better than cure, and we may well query whether, with a proper understanding of the true laws of nutrition, of the real needs of the body for food, with a clear conception of the processes of digestion, secretion, absorption, peristalsis, circulation and excretion, we should not be in a better condition to combat disease than we now are. There is still undiscovered territory, and the opinion may be ventured that when we hold in our grasp the key to an understanding of normal nutrition many forms of disease will be checked and held in abeyance through intelligent application of scientific knowledge. Even at the present day the physiologist and the practicing physician show a noticeable lack of agreement as

to what constitutes a proper diet under normal conditions, to say nothing of the requirements in cases of disease. Who can tell with any degree of precision the exact effects of proteid food upon the functions of the liver and kidneys, the effect of an accumulation of nitrogenous waste-products on the system, or the effect of different types and admixtures of foods on the growth of the young?

Prof. Chittenden expressed the opinion that two at least of the dread diseases of mankind—cancer and tuberculosis—are probably the result of a disturbance of nutrition in which at least the predisposing causes are to be found in excess of nutritive material in general in the blood, or to a disturbance in the balance of nutritive materials in the circulating medium, or possibly in the tissues themselves. In tuberculosis, he said, while all recognize the importance of fresh air, there appeared to be much uncertainty as to the character and extent of the diet best adapted for combating this disease. There was surely, he thought, a reaction going on against the altogether too prevalent fashion of overfeeding in it. In conclusion, he said that his own observations had led him to believe that there is much of value to be learned in a study of the minimal quantities of food required to maintain health and strength. The real needs of the body for food are unquestionably very much below the amounts ordinarily consumed, and, this being true, one may well ask, Does not this excess of food, for which the body has no true physiological need, in the long run imperil the health of the individual, diminish the ordinary powers of resistance, and so pave the way for various forms of disordered nutrition which we speak of as disease?

A THEORY OF PROTEIN METABOLISM.

This was the subject of a paper by OTTO FOLIN, Ph. D., Director of the Chemical Laboratory of the McLean Hospital, Waverley, Mass. Detailed analytical studies by him of urines rich in nitrogen and of urines containing the minimum amount of nitrogen have brought out facts which show, he believed, on the one hand that the prevailing views concerning the composition of normal human urine are erroneous, and on the other that the current theories of protein metabolism are untenable. While it is commonly

supposed that the urea contains about 90 per cent. of the total nitrogen in normal urine, this is really the case only when a large amount of protein is destroyed within the body and when the urine, in consequence, is rich in total nitrogen. When the daily protein consumption is reduced and the total nitrogen elimination diminished, the percentage of that nitrogen present as urea sinks lower and lower until it finally represents less than 60, and sometimes even less than 50 per cent. of the total nitrogen. This fact must be taken into account in the examination of pathological urines. When such urines are low in total nitrogen the urea determination alone is very misleading. The urines may be normal, and yet may contain only 5 gm. of nitrogen and 7 gm. of urea. Since the urea nitrogen sinks more rapidly than the total nitrogen when the daily protein katabolism is diminished, it follows that some other nitrogenous products must at the same time become relatively more and more prominent. The most prominent of these is one which has received comparatively little attention, viz., keratinin (containing about 37 per cent. of nitrogen), and yet he believes that keratinin is present in all urines. When the total daily protein katabolism is reduced keratinin not only becomes more and more prominent as a kabolism product, but the absolute amount of keratinin eliminated is not at all affected by the diminution in the elimination of total nitrogen.

The striking difference in the rôle played by urea and by keratinin in the daily metabolism constitutes the pivotal fact upon which he has ventured to construct a somewhat new theory concerning protein metabolism. The constancy in the keratinin elimination, as well as the constant presence of keratin in muscle extracts, when considered in connection with the enormous fluctuations in the urea elimination and the almost complete absence of urea, or of any adequate precursor of urea, in muscle extracts, indicates, it seems to him, that these two products are the representatives of two different kinds of protein metabolism. Since the kabolism which gives rise to keratinin appears to be for each individual a constant quantity, no matter how much or how little nitrogenous food is taken, and since its chief decomposition product is demonstrably always present in muscles

and other tissues, it seems justifiable to consider this metabolism the *tissue metabolism*. On the other hand, since the katabolic processes which produce nearly all the urea vary within such enormous limits and so directly with the supply of food protein, and since the urea is strikingly absent in the muscles, it seems fair to consider these katabolic processes as part of a more localized and specialized form of protein metabolism. This he has called the *exogenous metabolism*. The tissue metabolism represents the daily wear and tear of all the cells in all the different tissues, while the exogenous metabolism represents the specialized activities of certain definite organs, as the digestive tract and the liver. The question of the maximum protein consumption would seem to depend chiefly, if not exclusively, on the significance and importance of the exogenous metabolism. This exogenous metabolism may be regarded as only a preliminary process which has become necessary because our food products contain greater proportions of nitrogen than are necessary for the unimpaired maintenance of the normal full-grown organism. It would seem that we have at present no reason for assuming that anything like the 118 gm. of protein demanded by the standard diets is either necessary or advantageous for normal men with unimpaired digestions. On the other hand, we have no valid reason for assuming that the consumption of 118 gm. of protein is necessarily detrimental.

DISTINCTIVE FEATURES OF ANIMAL AND VEGETABLE DIETARIES.

PROFESSOR LA FAYETTE B. MENDEL, Yale University, read the second paper on this subject. The ready digestibility of the meat proteids and the consequent availability of flesh products, he said, has always been contrasted with that of the proteids in plant materials. It is undoubtedly true that a considerably larger proportion of the vegetable proteids is lost to the organism in the ordinary forms of vegetable diet. The important fact which is usually overlooked is that the vegetable proteids *per se* are as a rule not less digestible than those from animal sources, a statement which is quite justified by the more recent experimental investigations. The poorer utilization ordinarily recorded is attributable to the form in which the nutrients are present; in other words, to the peculiar texture of the

crude material. The physician of to-day should be in a position to accept at their correct value certain familiar fallacies which are still widely current with respect to food products. One class of these rests upon the untenable assumption that the chemical composition of a food-stuff is an adequate index to its nutritive value. This may be essentially misleading when either proteids or fats or carbohydrates are exhibited in a form which the digestive apparatus cannot satisfactorily appropriate. Referring to breads made from the coarser grades of flour, he said it was not intended to impugn their value from the clinical standpoint or to overlook the stimulating action which the indigestible ingredients may exert upon the motor functions of the intestine. We need, however, to draw a distinction between physiological action and nutritive value. The deficiency of ordinary vegetable dietaries in proteids has long been the subject of criticism by opponents of the vegetarian régime. In considering this with impartial judgment we may perhaps more properly speak of a *paucity* rather than a real deficiency of proteids in the vegetarian dietary, if we accept the evidence afforded by the researches of Prof. Chittenden and Dr. Folin on the actual proteid needs of the body. And, furthermore, it is well to bear in mind the recent progress in the production of palatable plant products which are decidedly rich in proteids. The animal dietary, employed in moderation, is not so profoundly different from any other adequate dietary, and it has, to recommend it, a high degree of digestibility and palatability. In the field of dietetic therapy, particularly, radical changes of diet frequently supply essential factors or eliminate deleterious ones in most welcome and unsuspected ways; but, in general, the exclusive system has no adequate justification.

THE MECHANICS OF SOME DIGESTIVE PROCESSES.

This paper was read by Professor W. B. CANNON of Harvard University. The object of his investigations had been to ascertain how different classes of foodstuffs, fats, carbohydrates and proteids are treated mechanically in the stomach and intestines—i. e., at what rate they leave the stomach. The foodstuffs were administered in uniform amount and of uniform consistence, with a uniform small amount of bis-

muth added, and the passage of the food through the alimentary canal was watched by means of the X-ray. The animals experimented on were observed at regular intervals for seven hours after feeding, and the observations recorded. The results obtained were presented in a series of lantern slides, the first of which showed the clearness with which X-ray shadows of food in the body can be seen. It was found that fat remains in the stomach a long time, leaving very slowly, and that carbohydrate stays in the stomach only about one-half as long as proteid. When there was a mixture of equal parts of carbohydrate and proteid, the food did not leave the stomach as slowly as proteid nor so rapidly as carbohydrate; the discharge being intermediate in rapidity. With a mixture of proteid and fat, the presence of the fat caused the proteid to leave the stomach even more slowly than proteid alone. So with a mixture of carbohydrate and fat, the fat caused the carbohydrate to leave the stomach more slowly than carbohydrate alone. It was evident therefore that the stomach readily lets go the carbohydrate food, which its juices do not materially affect, while it retains the proteid food, which its juices aid in digesting, until these juices have done their work. Peristaltic waves are passing all the time, but the proteid is prevented from issuing from the stomach by a mechanism at the pylorus.

Evidence is accumulating, he said, which goes to show that this mechanism is controlled by free acid in the stomach. Carbohydrates do not unite with acid; free acid is secreted very soon, and they have a quick exit. Proteids unite with acid to make acid proteid; free acid is delayed, and their exit is slow. Fats check the secretion of acid, and therefore have a slow outgo. The control of the situation is at the pylorus. The acid in the duodenum is known to close the pylorus and keep it closed, while that in the stomach has the effect of opening it. Thus, the acid chyme would go forth from the stomach, and with its acid close the gate behind it. But in the duodenum the acid gradually becomes neutralized by the alkaline secretions of the pancreas until at last the acid in the stomach can again open the pylorus. Then again the pylorus is closed and the process repeated. Thus, automatically, carbohydrates, on which the stomach works no change, would go early and

quickly into the intestine, where they meet their proper ferment; thus, automatically, proteids would be retained in the stomach to suffer alteration by the gastric juice, and only after such alteration be permitted to go on; thus, automatically, the intestine would be saved from oppression by overwhelming discharges from the gastric reservoir; and by this same automatic mechanism, the gastric secretion, harmful to the action of the intestinal ferments, is rendered innocuous because of its admission, little by little, into the duodenum.

DR. HARVEY W. WILEY, Chief of the Bureau of Chemistry, U. S. Department of Agriculture, delivered the following address on

THE INFLUENCE OF PRESERVATIVES AND COLORING MATTERS
AND THEIR RELATION TO NUTRITION.

The widespread use of preservatives and coloring matters in food products has attracted the attention of physiologists, physiological chemists, hygienists, and food officials during the last few years. Two important questions are involved in the use of these bodies in food products. One relates simply to the question of fraud or deception, and the other relates to the influence of these bodies upon health and digestion.

The artificial coloring of food products can scarcely be defended upon æsthetic grounds. The natural colors of foods are doubtless attractive, but simply because they are natural; and when these colors are not sufficiently developed in food products, either by fault of growth or preparation, the imitation of the natural colors becomes a simple deception. This deception should not be encouraged either by the consumer or the hygienist. The question of preservatives is also to some extent one of honesty in trade. There are many food products which are prone to decay, and, therefore, when they are presented in a well-preserved state it is reasonable to infer that they are fresh. If this freshness be retained for an indefinite time by the addition of chemical preservatives, it is to that extent deceptive. The chemical preservatives referred to are not those of a condimentary nature, which always reveal their presence by the odor or taste. On the other hand, they are those of a non-condimentary nature, which have neither odor nor taste.

Their presence, therefore, in food products is not announced to the consumer in any way unless it be by the label upon the foods themselves. Therefore, *a priori* the use of dyes and preservatives in foods is reprehensible, aside from their influence upon health.

In regard to this latter point the most conflicting views obtain. Numerous experiments have been made in various countries, and from the results of these experiments opposed conclusions have been drawn. In regard to the character of this evidence an important point is often lost sight of, namely, that a negative result is really a verdict of guilty. The experiments which go to show that no hurt has come from the use of preservatives and coloring matters are in reality condemnatory. Their use must be justified by positively beneficial results. On the contrary, with the prejudicial results obtained, the use of preservatives and coloring matters in foods, even in the small percentage of the cases where they are used, is or should be condemned. My own experience leads me to believe that the use of even small quantities of ordinary preservatives for a long while, or large quantities for a short while, leads to unfavorable effects. There is, in general, a loss of weight, a feeling of lassitude and malaise, and in some cases more pronounced symptoms of intestinal and metabolic disturbance. If it be assumed that with wholesome food the metabolic relations which are observed are normal, and these relations are changed on the addition of preservatives and coloring matters, then this change, no difference what it may be, must be regarded as prejudicial because it is not formal. I am unable in the short time at my disposal to go into the details of these experiments. In all cases, however, the same general results were produced. Some of the preservatives commonly used in foods, such as borax, act more vigorously and promptly than others, such as benzoic and salicyclic acids. In fact, these latter seem to have the least injurious effect of the ordinary preservatives employed. Of the coloring matters used I have only experimented with one, namely, sulphate of copper, and the results of this experimental work do not permit me to say anything very good of this very common and wholly unnecessary coloring agent. That small quantities of preservatives and coloring matters may

be occasionally used without danger is unquestionable; that the promiscuous, unlimited, and general use of drugs of this kind in foods is advisable is of equal certainty to be answered in the negative. There is apparently no excuse for forcing people in general to eat drugs in their foods whether they want to or not. The well-known tendency to tolerate certain quantities of drugs and to require larger amounts thereof, which is characteristic of the drug habit, must not be forgotten. There are unobjectionable ways of preserving food products for a reasonable length of time without the use of preservatives. There is an entire possibility of securing properly colored foods without the use of artificial dyes.

The chief points which I wish to call attention to in this symposium are as follows:

(1) There is no necessity for the use of chemical preservatives in food products.

(2) There is no necessity for the use of artificial colors in food products.

(3) It is not ethical to so prepare foods as to force people in general to eat preservatives and coloring matters whether they want to or not.

(4) Those who desire to eat preservatives and coloring matters in foods can have their foods specially prepared for them.

(5) The fact that small quantities of preservatives may do no harm is not equivalent to a verdict of "not guilty."

(6) It is certain that a great many conscientious and painstaking observers have established with reasonable certainty the fact that preservatives and coloring matters at times work injury to health and digestion.

DISCUSSION.

The President said that the Association was very fortunate in having present at its meeting one of the most eminent members of its profession from the continent of Europe, one whose investigations and publications on metabolism and kindred subjects were well known in this country, as they were all over the world. He took great pleasure in introducing Prof. Carl von Noorden, of Frankfurt-on-the-Main.

PROFESSOR VON NOORDEN said: Gentlemen of the Association, I am very much indebted to your President for his kind invitation, which gives me the opportunity of expressing my pleasure at being present at one of the most interesting and instructive meetings which I have ever attended. As to these questions regarding nutrition, I have personally interested myself in them for the past fifteen years,—partly in doing research work and partly in applying the results of such work in the matter of bedside treatment. I am therefore in a position to fully appreciate the scientific value of what we have heard to-night. We in Germany, I assure you, follow with the deepest interest the progress of investigations which you make here in solving these questions. In this country more has been done than in any other in this regard. The investigations and publications of the United States Department of Agriculture are unique in the world, and they have excited widespread interest, as well as facilitated the dissemination of knowledge regarding the problems of nutrition, not only in this country, but everywhere. I congratulate your country also on possessing such a society as this, which on the present occasion has succeeded in so conspicuously promoting our knowledge of this subject. And I cannot but believe that the successful achievement of to-night will win for it new friends and new help for further investigations in this important department of scientific work.

COL. VALERY HAVARD, Assistant Surgeon-General, U. S. A., late medical attaché with the Russian army in Manchuria, made the following remarks upon

THE RATION OF THE RUSSIAN AND JAPANESE SOLDIERS IN THE
FIELD AND ITS EFFECT UPON THEIR HEALTH
AND EFFICIENCY.

The lesson of the advantages of frugality in diet so convincingly taught us by Professor Chittenden has never been so impressively demonstrated, nor on such a vast scale, as during the Russo-Japanese war in Manchuria. Both Russian and Japanese soldiers were fed on rations which American and English soldiers would have rejected with scorn, and yet, for rugged health, strenuous work, and

endurance of hardships, during a long winter campaign, I doubt whether these troops have ever been excelled. The Russian ration in the field consists of about 2 lbs. of black rye bread, 14 oz. of fresh meat, 3 or 4 oz. of cereals or grits, and some vegetables, tea, and sugar. Of course, these quantities, especially the meat, are often reduced in emergencies. The black bread is not palatable to the American taste, and probably not very nutritious, but it possesses a decided advantage in the field in that it has laxative properties, so that constipation is unknown in the Russian army. In the emergency ration the black bread is replaced by hard-tack, which is simply the same bread dried up, and the fresh meat by 8 or 10 oz. of canned beef. In the Russian army each company has an ambulant or traveling kitchen on wheels, drawn by two horses, and consisting chiefly of a huge boiler with furnace underneath. Wherever the company goes, the kitchen follows. Thus, while on the march the dinner is cooking, and can be served as soon as the company stops to make camp. All the constituents of the ration, bread excepted, are put into the boiler, and the result is an excellent soup. This soup, with whatever vegetables it contains, having been eaten, the meat is forked out from the boiler, sliced, and distributed as a second course.

The Japanese soldier's ration consists of about a quart of rice, half a pound of fresh meat or fish, and some vegetables and tea. When going into a fight he has given him, instead, an emergency ration consisting of cooked rice or hard-tack, and a 4-oz. can of beef. In many situations far from bases his fare was reduced to rice and such vegetables as could be procured in the locality, articles which, considering the scarcity of fuel, must have been difficult to cook. That, under such conditions, the Japanese soldier should have done such wonderful work is matter for amazement and reflection.

Having formed some idea of their food, we may now consider the health condition of the Russian and Japanese troops during the war in Manchuria, and draw such conclusions as we may. The experience of all former wars has been completely reversed; instead of the mortality from disease greatly exceeding that from wounds, we find that

it is much less. Let us look, for instance, at some of the statistics of the Russian army in Manchuria. According to official reports, the ratio of sick per 1,000 men ranged, during the year 1904, from a minimum of 12 in April to a maximum of 39 in July. These ratios were less than for troops at home in Russian garrisons during the same months, and less than among our own troops in time of peace. During the year, the total number of sick reported was less than 80,000, and of these more than one-half had been returned to duty by the last day of December, while only 2,730 had died. In computing the Russian statistics of the war to the close of hostilities, about May 1, I find that, approximately, the total wounded is to the total sick as 4 to 3; while the total mortality from wounds is to that from disease as 47,000 is to 6,000, or about 8 to 1—a result far beyond the most sanguine hopes of military hygienists. In the Russian army there has been no epidemic of any kind, no prevalent camp disease; and yet infectious germs were not lacking. There were always cases, not only of typhoid fever, but also of typhus, recurrent fever, dysentery, and anthrax; yet these diseases never spread beyond the sporadic stage. Thus, the number of cases of typhoid fever seldom, if ever, exceeded 5 per 1,000 men—a ratio we may compare with our own ratio of 150 and more per 1,000 in our camps of 1898.

Regarding the health of the Japanese troops I have no reliable data and cannot speak with authority, but, from all accounts, it was also eminently satisfactory, and would have been at least as good as that of the Russians had it not been for beri-beri, from which they are said to have seriously suffered, making up at least three-fourths of their morbidity. The cause of beri-beri has not as yet been definitely determined. The former belief that it is due to an exclusive vegetable diet, such as is used in countries where this disease prevails, has been abandoned. It is now considered an infectious disease whose germ breeds in the soil of certain infected localities, according to Manson, or in the human intestines, according to Hamilton Wright. In either case it should be amenable to ordinary measures of prevention and disinfection. It has already disappeared from the Japanese navy, and will probably soon be rare in the army.

How are we to account for the low morbidity and mortality of Russian and Japanese soldiers in the Manchurian war? Doubtless several factors contributed to this result: the scattering of the troops over a very long line, a sufficiency of good hospital accommodations, the prompt removal of suspicious cases from camps, the general use of tea as a beverage (that is, water that has been boiled), and, so far as the Russian army was concerned, the general use of soup, which is food and drink in a very digestible and sterilized form, and of black bread, which, by its laxative effect, prevented the accumulation of infectious matter in the intestines. But when all these apparent causes of the wonderful health condition of the Russian and Japanese troops have been taken into consideration, we are conscious that there remains an underlying cause still unexplained; for it is a fact that various infectious diseases were present, and that all conditions for their spreading were favorable. Under stress of thirst in warm weather the soldier of any nation will drink water wherever he finds it, without considering whether it is pure or polluted, and such was the case in Manchuria. Fæcal matter was abundant enough in camps, and always more or less exposed. Flies swarmed in summer, and clouds of dust filled the air in winter. Furthermore, the men were necessarily much crowded in dugouts or underground huts, with very defective ventilation. Yet, as stated, in spite of these conditions, which would rapidly have decimated an American, English, or French army, the Russian and Japanese troops remained in excellent health. This means, in my judgment, that they were not susceptible to the extent that we are to typhoid fever, typhus, and dysentery; that they enjoyed a large degree of immunity to these diseases. How may we account for this immunity to typhoid fever, of not only Japanese and Russians, but many other Oriental peoples—Chinese, East Indians, etc.? This comparative immunity I also noticed in Cuba during our military occupation of that island; although we brought an abundance of infection with us, and scattered it all over the island, typhoid fever never spread. This disease, indeed, has always been rare among the natives, except in the better classes, whose diet and habits approximate our own.

In answer to this question two theories suggest themselves. First, it is possible that in countries where hygiene and sanitation are still primitive or imperfectly understood, and the people constantly exposed to infection, a large proportion of the inhabitants contract the disease in infancy, in a mild form, and thus become immune in adult life. Another theory, and one to which I attach greater probability, is that which is based on diet. Those countries enjoying more or less immunity to typhoid fever are comparatively poor countries, where frugality is necessarily enforced and has become a habit, where meat is scarce and but little used, and where the people, therefore, are practically vegetarians. It seems reasonable, then, to believe that this immunity may be the result of a vegetable diet; with this the intestinal media being less favorable to the growth of the typhoid bacillus, or else a bacterial flora produced which is inimical to this bacillus. In confirmation of this theory, I may repeat that it has been observed in some countries, as in Cuba and India, that the ratio of typhoid fever increased among the richer classes, those departing most from their native frugality and freely indulging in proteid diet. At all events, the relation of diet to the development and spread of infectious diseases is interesting and important, and well worthy of careful investigation.

DISASTROUS EFFECTS OF IMPROPER DIET.

MAJOR LOUIS L. SEAMAN, late Surgeon of the First Regiment of Engineers, United States Volunteers, who was recently with the Japanese forces in Manchuria, said that he could not agree with Colonel Havard in regard to the causation of beri-beri, as his observations went to show that the disease was due to a diet lacking in proteids. He then went on to speak as follows: I was specially interested in the remarks of Professor Cannon on the mechanics of certain processes of digestion. His elucidation of the subject was so clear that one could not help regretting he had not gone a little further, leaving the paths of physiology for those of pathology, and telling us something of the results of the use of a defective dietary; in other words, enlightened us on the effects of a diet in which the food

no longer serves as aliment, but acts as a foreign substance or irritant, and so became a factor in the mechanical production of disease.

It was this particular cause that contributed largely to bringing the American army almost to its knees in its short campaign in Cuba and Porto Rico in 1898, when whole regiments were suffering from diarrhoeas and intestinal catarrhs. I have seen over 75 per cent. of a command victims of these disorders at one time, because they were subsisted on a ration the components of which were principally fat pork, canned beef, baked beans, and canned tomatoes, the latter often in a state of fermentation owing to the intense tropical heat to which they had been subjected. Fancy a man while suffering with acute intestinal catarrh being fed three times a day on this diet. Would any of you, gentlemen, think of treating a patient in that way, and not expect him to die? And yet that is the diet which the soldier received, because he could get nothing else, and with the natural result that soon there was engrafted a pathological condition, with grave lesions. The presence of undigested food, acting as an irritant, produced a congested condition of the liver, and the secretion of bile was retarded. This natural disinfectant of the intestine being suppressed, fermentation followed, with an auto-intoxication as the result, and the intestinal tract from end to end became a vast culture-ground for the development of any and every micro-organism that could find entrance. That a very large proportion of the disease from which our army suffered was thus mechanically produced is undeniable. My own regiment, which landed in Porto Rico in perfect physical condition, lost over five tons in weight in three months, instead of returning home after its summer's outing as well as when it started.

Nor are these dietary disasters confined to our own land. In the terrible conflict just ended in the Orient both contending armies suffered, but from entirely different causes. In the dreadful siege of Port Arthur, both the attacking and the besieged forces had to endure the blistering heat of a Manchurian summer and the biting blasts of an almost Siberian winter on the barren rocks around the historic fortress. Both were subjected to the same fearful tension,

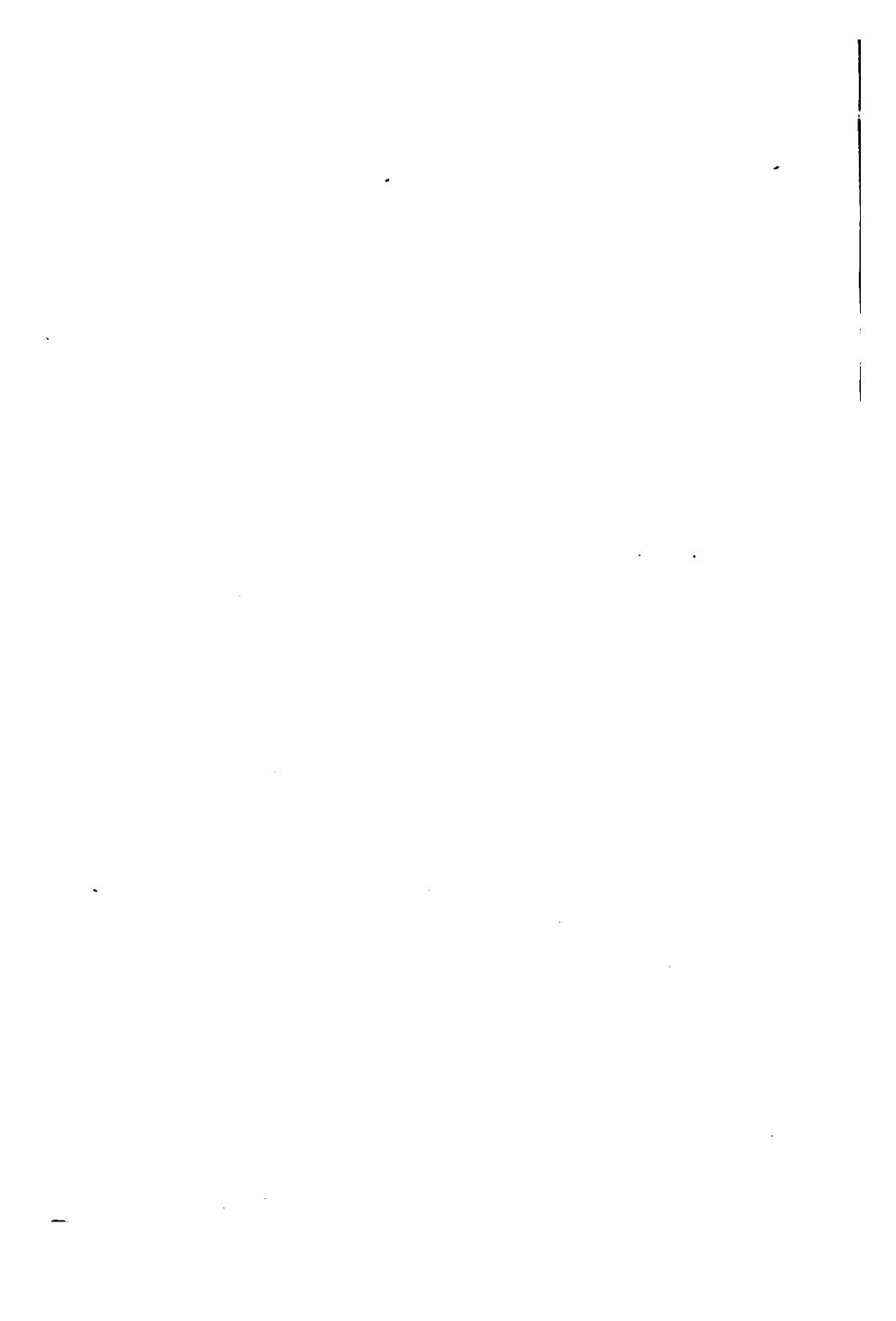
the same long suspense and excitement, the same terrible hardships and nervous strain—the only lines between them being the firing lines. In neither army, as Colonel Havard has just told you, did contagious diseases constitute an important factor. In the Japanese ranks there was little infection, and in the besieged forces the percentage of invalidism from this cause was very small; and yet both armies had a terrible scourge, and from diametrically opposite causes. The Russians, blockaded by the fleets of Togo on one side and confronted by the impenetrable forces of Nogi on the other, were compelled to subsist on a diet without vegetables, and they rapidly succumbed to the ravages of scurvy, 9,093 cases being found in the fortress when it capitulated. The Japanese, living on a diet almost exclusively of vegetables (especially one, namely, rice, deficient in nitrogenous elements of nutrition), had their ranks seriously thinned by kakké or beri-beri. It is doubtful if the annals of history can furnish a more striking illustration of the disastrous effect of a defective dietary on opposing armies in the field.

The solution of the subject of a proper dietary for our own army is not a simple one, or if it is, the ruling authorities cannot be made to appreciate it. If the talent gathered here this evening would take an active part in the practical solution of this question much might be done toward ameliorating the sufferings of a class of men whose trials in time of war, it would seem, are already sufficiently severe.

**A FIXED AND DEFINITE QUANTITY OF FOOD ENERGY REQUIRED
FOR THE PROPER PERFORMANCE OF THE LIFE FUNCTIONS.**

PROF. GRAHAM LUSK, of the University and Bellevue Hospital Medical College, said that in these days of advocacy of a reduced diet it should be remembered that in reality the average man at light work needed a very fixed and definite quantity of food energy for the performance of his life functions. This was not far from 35 calories per kilogramme of body substance daily. Additional work increased this requirement for energy. Thus an individual weighing 70 kilogrammes, and producing 2,400 calories, when at light work, would increase his metabolism by 600 calories if he walked for four hours on a level road at the

rate of 2.7 miles an hour. Hence, a total of 3,000 calories daily did not seem too much for an average laborer. It has been recognized from the work of Chittenden that only 5 per cent of the required calories need come from proteid. The balance, or 95 per cent of the total energy requirement of the organism, may be divided between carbohydrate and fat. A similar relation has been recently shown by Kubner and Heubner to exist in the case of breast-fed infants. It was found by them that the mother's milk contained 7 per cent. of its energy in the form of proteid, of which 5 per cent. were metabolized and 2 per cent. added to the young organism. The rest of the energy content of the milk was burned to complete the maintenance of the infant's life functions.



Stated Meeting, November 13, 1905.

SYMPOSIUM ON CLINICAL PATHOLOGY.

This was opened by DR. LOUIS FAUGERES BISHOP in a paper on

THE RELATION OF CLINICAL PATHOLOGY TO ACTUAL PRACTICE.

The problem, he said, was to make clinical pathology available to the men who actually do the bulk of the practice of the city. Clinical pathology has been too much in the position of a consultation branch, rather than a help in every-day work. Too many men call in technical examination only when the case seems obscure or when the patient is very ill. The most obvious solution of the problem which immediately presents itself to any man is that he should take a course in laboratory work, and then make a practice of carrying on these observations for himself. But the practice of medicine is too complicated an occupation to allow of the proper atmosphere for laboratory work. There is too much of the social and personal required to allow the combination of the two kinds of work in the general practitioner. The most successful men from the point of view of having satisfactory practices are those who concentrate most of their attention upon the treatment of their patients, keeping other matters much in the background. As it is practically impossible for these men to do clinical pathology themselves, they have fallen into the habit of neglecting it, except in cases where it was evidently important, and then sending a specimen or two to an eminent authority for an opinion.

The whole procedure is too expensive to be employed in a routine way with all the patients. To do this for all his patients it is necessary for the physician to obtain the co-operation of men who have neither reached the height of reputation as pathologists nor obtained the position of established practitioners. Such men are found in these days among the graduates of our hospitals, particularly those who have had a pathological service.

Up to the present the relation of clinical pathology to private practice has not been satisfactory, and the remedy for this condition of affairs is to be found, first, in disseminating among practitioners the knowledge of the actual value of the findings of the laboratory in indications for treatment; then in building up the confidence of the profession in the work of the younger graduates of hospitals, and in separating routine work, such as these men are perfectly capable of doing, from the higher class of work which calls for the expert knowledge and opinion of established specialists in clinical pathology.

LABORATORY AIDS IN THE DIAGNOSIS OF DISORDERS OF THE DIGESTIVE TRACT.

DR. E. E. SMITH read a paper with this title. He said he would not attempt a systematic presentation of the whole subject, but rather content himself with a discussion of such isolated facts as seemed of special interest. A word of precaution was necessary in connection with the diagnosis of diphtheria. When the morphology is typical, the diagnosis from serum cultures is quite conclusive. Occasionally, however, it happens that the procedure is uncertain, and he mentioned a case of supposed diphtheria which proved to be one of syphilis. Fortunately, in cases such as this, we have other aids to diagnosis, namely, the examination of smear preparations made directly from the ulcerated surface. At least two diseases are differentiated from true diphtheria by a competent examination of such material—Vincent's angina, by the recognition of the characteristic fusiform bacilli, and syphilis, by the recognition of the *spirochaeta pallida*. It is as yet too early to say with certainty that this last organism is the cause of syphilis, but so far, at least, a knowledge of its presence seems to afford considerable aid to the bacteriologist.

The examination of the stomach contents, either vomited, obtained in gastric lavage, or removed after a suitable test-meal, is of unquestionable value, and should be more generally practiced, especially in chronic gastric disease. In this connection Dr. Smith spoke particularly of cases of persistent vomiting due to a condition of acid-intoxication.

In these the associated clinical manifestations may be varied; but the occurrence of attacks of vomiting, usually lasting several days, is constant. In such cases the attacks may be prevented by a proper dietary, and aborted by the heroic use of alkaline medication. Riegel has emphasized the value of differentiating between the gastric conditions of hyperacidity, alimentary hypersecretion, and continuous hypersecretion; the differentiation being made from the amount of stomach contents removed after the test-breakfast, its acidity, and the absence of gastric secretion during starvation. If the stomach content, after the test-breakfast, is not increased in volume (that is, two ounces or less in quantity) and constantly, or even generally, has an excessive hydrochloric acidity (say 70 or more), the condition is one of simple hyperacidity, usually readily amenable to treatment. If, on the other hand, the volume is increased (and this increase usually carries with it an increased hydrochloric acidity), it is important to determine whether the increased flow is simply alimentary or is continuous, occurring independently of the stimulating action of food. It is not to be expected that every patient with acid stomach shall be subjected to the searching methods referred to, but in cases where even an approach to scientific exactness is claimed, the analysis of the gastric contents is certainly imperative, even if the clinical symptoms are not pronounced.

Most physicians make much of the macroscopic examination of patients' stools, but relatively few realize the value of extending the examination further. The microscopic examination of this material, however, may well have a place in routine practice. Examined directly, it rarely shows the presence of pathological admixtures unappreciated by the naked eye, but it may reveal the presence of a parasitic invader, either directly or from the ova. Dr. Smith always examines a portion of the faeces stained with iodine, and finds that it is of considerable value in acute or subacute disturbances to know of the presence of the blue-staining butyric acid bacillus, since in these cases antisepsis by the aid of acetozone, both by the mouth and high enema, is of unquestionable value. Special bacteriological examinations are also undertaken with profit, nota-

bly the isolation of the typhoid bacillus, which is proving of diagnostic value. A procedure which has attracted much attention of late is the recognition of the so-called occult blood in the faeces. By means of a delicate chemical test it is possible to detect blood so modified by the gastro-intestinal processes that it cannot be recognized by the microscope. Occult blood has the same significance as visible hemorrhage. It is constantly present in cancer and intermittently in ulcer, while it is absent in gastritis, hyper-acidity, hypersecretion and the gastric neuroses. Its occurrence is an aid in the diagnosis of a suspected typhoid, and aside from the diagnostic value of the test, it is useful in indicating the therapeutic action of remedies in gastric ulcer. Having advocated the examination of bile, where it is available, he said in closing that he would like to emphasize the importance of the histological examination of all suitable material, whether connected with the alimentary tract or from other parts of the body. Its diagnostic value is at times unexpectedly considerable. Thus, in a series of examinations of appendices recently reported at the Pathological Society, 5 per cent. revealed the existence of primary carcinoma, a condition usually regarded as rare.

DR. FREDERIC E. SONDERN read a paper on
THE PRESENT ATTITUDE OF BLOOD EXAMINATION FOR
DIAGNOSTIC PURPOSES.

The evolution of haematology during the last decade, he said, has been so pronounced that at the present time an accurate knowledge of the blood condition is considered essential in the diagnostic and prognostic conclusions in all but the most trivial cases. To-day simple anaemia, pernicious anaemia, splenic anaemia, and Hodgkin's disease can be differentiated with greater precision than the former less accurate knowledge of the blood changes allowed. In the different forms of acute and chronic leukæmia recent work has taught much, and justifies dissatisfaction with the present clinical classification of these conditions. Acute lymphatic leukæmia, as well as the recently described acute myeloid form of the disease, presents a clinical picture

simulating an acute infectious process, and it is by means of the routine blood examination that the differential diagnosis is now most frequently made, improper surgical procedures prevented, and the fatal prognosis learned at the earliest possible moment.

In acute febrile conditions, when the clinical picture is not yet sufficiently pronounced to justify a diagnosis, a routine examination of the blood is often a guide and always a comfort. This examination shows the degree of anæmia, if any, and a search for plasmodia, a Widal test, an enumeration of leucocytes, and a differential count of the latter, while they may not establish the diagnosis, at least confine it within narrower limits, and often exclude grave conditions feared. In malaria the increase in the relative number of large lymphocytes is an additional stimulus to repeated search if plasmodia are not found at once. In the event of coma the knowledge that meningitis and brain abscess are always accompanied by a leucocytosis and relative polynuclear increase, that uræmic, post-epileptic and diabetic coma sometimes show leucocytosis, and that narcotic or alcoholic poisoning, hysteria and tumor have no accompanying leucocytosis, is also of diagnostic value when combined with clinical observation. The pronounced leucocytosis and relative polynuclear increase always met with in scarlet fever may be of diagnostic value in the early stages of that disease. While the anticipation of early diagnosis in typhoid fever from the Widal serum reaction has been but partly fulfilled, owing to the delayed response to this test in many cases, the fact that uncomplicated typhoid shows no leucocytosis and a relative lymphocytosis on differential count of leucocytes, is an aid not to be overlooked. In pneumonia a consideration of the blood picture is often of the greatest value in both diagnosis and prognosis. In central pneumonia and in other cases where the general symptoms are present, but the physical signs indefinite, the existence of a pronounced leucocytosis often justifies the diagnosis. As to the prognosis, the increase in the relative number of polynuclear cells is a direct indication of the severity of the toxic infection and the degree of leucocytosis an absolute indication of the body resistance toward the infection.

As regards surgery, the arbitrary rule, that no operation is to be undertaken when the percentage of haemoglobin is below 30, should no longer adorn our text-books. The chlorotic girl with 30 per cent. haemoglobin, 4,500,000 red cells, a nominal leucocyte count, and perhaps a slight relative lymphocytosis on differential count is certainly in much better condition to withstand an imperative operation than the case of secondary anaemia, with 50 per cent. haemoglobin, but only 2,000,000 red cells, a marked leucopenia, and a high relative lymphocytosis. One of the most important spheres of usefulness of blood examination in surgery is its value as a guide to the existence and severity of an inflammatory process, to the presence or absence of a purulent exudate, and to the resistance offered by the economy toward the toxic infection.

SOME RECENT ADVANCES IN URINOLOGY.

The last paper of the evening was by DR. LOUIS HEITZMANN, on this subject. Of late years, he said, great stress has been laid upon different methods for ascertaining the functional efficiency of the kidneys, but as no individual one has been universally applicable or successful in every instance, new methods are constantly introduced. The one which has in recent years been more frequently employed than any other is cryoscopy; this is the determination of the freezing point of urine and blood, which varies in proportion to the number of molecules a solution contains. As the apparatus necessary for obtaining the freezing point of urine and blood is not always at hand, and extensive experiments have shown that cryoscopy, although undoubtedly of value in some instances, is not entirely trustworthy, other methods were resorted to for determining the functional capacity of the kidney. Of these, the methylene-blue test, the phloridzin test, and the toxicity test should be mentioned. In the first, methylene-blue is injected into the tissues and normally appears in the urine in from fifteen to thirty minutes, while in diseased kidneys its excretion is more or less delayed. After the injection of phloridzin subcutaneously, sugar soon appears in the urine in healthy individuals, its excretion being considerably diminished or absent in diseased kidneys. Neither of these tests is at all reliable, and

the toxicity test still less so. In health, urine is poisonous when injected into animals, such as rabbits, though this toxicity varies even under normal conditions. In nephritis it is diminished, and the urine is claimed to be non-poisonous when the renal lesion is extensive. Electric conductivity of the urine is another method which has been employed, but found to be of little or no practical value. Recently, however, Kolischer and Schmidt have revived it, and consider the method a very sensitive one, provided a stain were used which would remain inert to the disassociating influences of the electric current. Indigo-carmine was found to meet the required indications; its introduction would always lower the conductivity. Their experiments showed that the electric conductivity in diseased kidneys was increased much beyond that observed in normal specimens and correspondingly decreased when even the slightest traces of stain appeared in the urine.

It is quite evident that no surgeon should determine upon the removal of one kidney before he has satisfied himself of the functional efficiency of the other kidney, but no unanimity as to the method to be used has as yet been attained. No instrument is more accessible to the physician than the microscope, but so far the general results obtained by microscopical examination have been far from satisfactory. The reasons for this unsatisfactory condition are plain, when we look at the manner in which such examinations are conducted. A large drop of urinary sediment is placed upon a slide and without taking the trouble to cover it with a cover glass, is rapidly examined with a low magnifying power, such as a two-thirds lens; in most cases it is deemed unnecessary to apply a higher magnifying power at any time. The result of such a cursory and, to say the least, insufficient and superficial examination is quite frequently the discovery of so-called tube-casts without the presence of any other evidence of an inflammation, where in reality cast-like structures, but no true casts, are present. These structures may be mucus, extraneous fibres, large flat epithelia, mycelia or other substances, but are called casts, when a higher magnifying power and a more careful examination would at once show the error of such a diagnosis. A urinary sediment, which is obtained either by cen-

trifugalizing or preferably by allowing the urine to settle for at least six hours, should never be examined without the use of a cover glass nor with a lower magnifying power than 400 diameters. In the majority of cases the old method of sedimentation, by allowing the urine to stand at rest in a clean, well-stoppered bottle or a conical vessel in a cool place, is better than the use of the centrifuge, as the latter is more liable to lead to mistakes in diagnosis than the former. The Abbé condensor, which is almost invariably used in these examinations, should be removed, as the features become more plainly visible without it. When these precautions are observed better results in diagnosis will be obtained than is the rule at the present time.

In order to determine the functional efficiency of one or both kidneys, the urines should be obtained separately from both kidneys by means of the cystoscope and ureteral catheter, and chemical and microscopical examination be conducted separately with each specimen. It is not sufficient to simply look for the presence of casts and lay no stress upon the presence of other features, but, on, the contrary, every feature is of importance for a correct diagnosis. In nephritis casts are by no means present in every case, and many cases in which true casts are never at any time seen, escape detection, and are either not diagnosed at all or too late to save the life of the patient. On the other hand, mistaken diagnoses of casts can work serious harm. It is not at all rare to hear of the presence of granular, fatty and even waxy casts in the urine of persons who never have had any symptoms referable to the kidney, who are apparently perfectly well, and whose urines do not contain any appreciable amount of albumin. These are the cases which are accountable for the fact that many physicians place little reliance upon microscopical urinalysis.

When the examinations are carefully conducted the microscope is undoubtedly of extreme aid in the diagnosis of many lesions of the genito-urinary tract. Not only can nephritis be positively diagnosed when true tube-casts are not present, but also pyelitis, ureteritis, cystitis, prostatitis and other inflammations as well as suppurations, ulcerations and many other conditions. When a proper magnifying power is used, the first step should be to look for pus-

corpuscles or leucocytes; these are the smallest granular corpuscles in a given case, and although they may vary in size somewhat, they never do so to a great degree in the same case. As soon as formations about one-third larger in diameter are found, the diagnosis of kidney epithelia from the convoluted tubules can be made. These epithelia will never be seen in normal urine, but only in pathological conditions of the kidney, and are usually the more abundant the severer the condition of the patient, although the numbers of the other features must always be taken into consideration. The presence or absence of a nucleus has no significance, as such a nucleus may or may not be seen in pus-corpuscles. Red blood globules, pus-corpuscles and cuboidal epithelia from the convoluted tubules of the kidney, which in urine are usually round or oval formations, are perfectly sufficient for the diagnosis of a nephritis. Columnar epithelia from the straight collecting tubules of the kidney may also be seen, but usually only in the more intense cases. Casts need not be found at all in cases of interstitial nephritis, and when they are present are usually quite scanty. In acute nephritis red blood globules are seen in at least moderate numbers, while in chronic inflammations they are either scanty or entirely absent, but newly-formed glistening granules and globules, the fat-globules, secondary changes of the protoplasm, make their appearance in the pus-corpuscles and epithelia. Many cases of suspected nephritis or even hyperæmia of the kidney, which perhaps show a trace or a faint trace of albumin in the urine, but which do not show true casts, can thus be readily cleared up.

It is not at all difficult to locate the pathological process in the genito-urinary tract, as the majority of epithelia in the urine, though not all, are characteristic enough to admit of their location. Besides this, all deeper-seated lesions will give connective-tissue shreds in the urine, the appearance of which is entirely different from that of mucus-threads; their presence admits the diagnosis of some destructive process. In this manner a diagnosis of a suppurative nephritis or pyelitis can be made and when the urines from both kidneys are examined separately, it will at once become apparent whether the condition has affected only

one or both kidneys. Again, the appearance of the pus-corpuscles will in many cases tell us the constitution of the patient, as coarsely granular, compact corpuscles are found in persons with a good constitution, while pale, finely granular corpuscles are seen in those with a poor, broken-down constitution. The gradations between the two extremes are many, and persons with an originally good or excellent constitution, which has become impaired by disease, show varying numbers of coarsely and finely granular corpuscles, the one or the other predominating in accordance with the degree of impairment.

Microscopical examinations of urine, when carefully carried out, are undoubtedly more reliable than other methods for determining the functional condition of one or both kidneys. Numerous cases could be cited, he said, to prove this assertion, but time permitted of only one: The two catheterized urines from a girl of nineteen years were received for examination, and the diagnosis made was, chronic suppurative nephritis with pyelitis of tubercular character on the right side; mild interstitial nephritis on the left side. The surgeon was cautioned against operation, the constitution of the patient as revealed by the appearance of pus-corpuscles, being given as poor. As the patient became worse clinically and suffered intense pain in the region of the right kidney, an operation was nevertheless decided upon, and the patient died about one hour after the operation. Upon autopsy, the right kidney was found to contain a number of variously sized abscess cavities, which had also invaded the pelvis of the kidney, while the left kidney showed the evidences of a mild interstitial inflammation. When cases similar to the one related are constantly seen, any doubt as to the aid which the clinician can obtain by means of microscopical urinalysis must be dispelled.

DISCUSSION.

DR. EUGENE COLEMAN SAVIDGE said that we all recognize the importance of clinical pathology, and all resort to its aid to a greater or less extent. But he thought a frank interconfidence would show that we have done so less than we should. The reason is obvious. Our hospital facility, when as junior we did this work, left us when we came to

the desultory specimen in our office. And our work sent to pathologists became a fixed charge against us without appreciable return. Patients felt that we should know all this ourselves; they resented our rehiring for it. Therefore, many of us economized our light from pathology. Now it is not expedient that a man who designs to do first-class work should burden his attention with laboratory routine. Like the problem of literary presentation, any collateral subtracting from our sum total of attention leaves just so much less attention for the matter submitted. What we expend in laboratory routine is so much deducted from our general efficiency. Not being able to do it ourselves and not wishing to incur new fixed charges, therefore, we are apt not to do it, unless under some co-operative special plan under which we can apply as often as desired. In urging the importance of frequent resort to the laboratory, he would, for lack of time, restrict himself to the single phase of renal work.

Greater freedom of laboratory work has given him (1) renewed faith in certain forms of therapeutics; (2) an almost iconoclastic conviction that we have been making errors after certain laboratory findings; and (3)—and of greater importance—an insight into conditions which have proved themselves to be observable long before there are laboratory findings. In other words, the laboratory is both confirmatory and non-confirmatory. It clarifies as much by what it does not tell as by what it does tell. These conclusions are to be explained in this way: (1) In almost all patients over forty who put the tension of concentration on the vaso-motor system, faint traces of albumin can be found in the urine if it is examined often enough. (2) Certain forms of therapeutic means can vary the specific gravity, the output of urea; can compass the solution of irritating crystals which point to sure future trouble; can, in these relaxed venous cases, even remove albumin by enhancing the tonicity of the veins. (3) Having thus, by repeated laboratory use, seen the relation between arterial tension and the output of urea, between venous tonicity and albumin, between specific gravity and the appearance and disappearance of haemoglobin, the following conviction has grown in his mind: Varying these conditions will vary the

laboratory findings. Also, the conditions may exist and be perfectly observable some time before the laboratory will give any findings. There is, therefore, it will appear, a renal physiognomy, which can thus be early recognized, even while the laboratory reports normal urine. Frequent laboratory access, therefore, will teach, through the inter-relations thus learned, how much we can do before the laboratory itself is able to speak.

DR. MAX EINHORN said that the clinical symptoms, in conjunction with the history of the disease, and a thorough physical examination, stand foremost in making a diagnosis. Laboratory methods are of use, but they come in secondarily, as adjuvants. Dr. Smith mentioned that it was necessary to wash out the stomach on the preceding night when examining for continuous gastric hypersecretion. Dr. Einhorn does not usually wash out the stomach beforehand, but prefers rather to give the patient on the evening preceding the examination a plateful of rice. Then, in the morning, the patient is examined with the tube. If the stomach is perfectly empty, there is no ischochymia, and no hypersecretion. In case there is food (rice, etc.) found in the stomach, we have to deal with ischochymia. If there is no food, but a considerable quantity of liquid (about 2 or 3 ounces), containing hydrochloric acid, the condition is one of continuous hypersecretion. Dr. Söndern laid much stress, in the matter of prognosis, on the relation of the mononuclear elements to the polynuclear cells. Dr. Einhorn was the first to make differential counts of the various white blood cells, and he early recognized the importance of the diminution of the lymphocytes in cases with bad prognosis. This statement can be found in his dissertation: "Das Verhalten der Lymphocyten zu den Weissen Blutkörperchen," published in Berlin in March, 1884. He thought Dr. Söndern deserved much credit for having investigated on a large scale the differential count of the white blood cells.

DR. RICHARD VAN SANTVOORD spoke of the necessity of interpreting laboratory findings by clinical methods. He thought that at the present time the tendency was to depend too much on the results obtained in the laboratory.

In certain instances too great significance was attributed to the leucocyte count. A single tubercle bacillus in the sputum did not prove the presence of tuberculosis. In stomach troubles a single examination might mislead. A number of examinations were generally required to determine the true condition.

DR. ROBERT COLEMAN KEMP spoke of the relation of analysis of the gastro-intestinal contents to diagnosis, and referred to a case in which its value was illustrated. In disease of the stomach, examination of the gastric contents was of great importance. Thus, by observing the quantity of food remaining at a definite time after the ingestion of a test meal we could determine the presence of motor insufficiency and its degree. The average physician should familiarize himself with the macroscopic examination of the stomach and with simple tests for determining the commoner conditions likely to be met with. Physical examination of the stomach and an analysis of the gastric contents were extremely useful in cases of pulmonary tuberculosis. In this disease he believed in stuffing the patient, but stuffing in a common sense manner. The proper kind of food should always be selected. The relations of the gastro-intestinal tract to nervous disease was also very important. In neurasthenia or in epilepsy, for instance, much could be gained by finding out the indications for the patient's diet.

DR. E. LIBMANN said he wanted to refer particularly to a subject to which Dr. Sondern had directed attention, namely, acute leukæmia. In that disease, osteomyelitis of the jaw may be the first manifestation for which the patient asks for treatment. As the leucocyte count may be no higher than in cases of suppuration not accompanying a blood disease, it is only by examinations of spreads that the correct diagnosis can be made. It is all the more necessary to examine spreads, as well as count the leucocytes, because in suppurations occurring in the course of any case of leukæmia, the leucocyte count may become much diminished. As to blood cultures in so-called septic cases, it is generally believed that we ought to find bacteria in the blood in all cases. His experience would tend to prove that this is not correct. In the first place, even in the infections in which bacteria gain

access to the blood-current the tendency is for them to disappear. The causes of their disappearance are supposed to be the bactericidal power of the serum, phagocytosis, and probably elimination by the kidneys and other channels. In some cases we can be sure that they multiply in the blood. In the second place, some forms of infection by pyogenic organisms are not apt at any time to be accompanied by a bacteriæmia. Such conditions are suppurative pylephlebitis, appendicitis and infections of the veins leading from the uterus and adnexa. As regards the necessity for well diluting the blood in making cultures: this holds for the typhoid bacillus and staphylococcus albus only. The blood removed from the body seems not to be bactericidal for the streptococci, staphylococcus aureus, gonococcus and pneumococcus.

DR. HENRY HEIMAN said that his participation in the discussion would consist merely in alluding to some of the facts of practical haematology as related to the practice of medicine. One of the first great advances in the study of haematology was made in 1880 when Laveran demonstrated in cases of malaria the presence of plasmodia. The further studies of this and other observers regarding the morphology and biology of the plasmodium, and in 1891 the introduction of modern staining methods by Ehrlich, have made practicable the classification and differentiation of the various forms of malarial fever. Formerly malaria was empirically treated by the administration of quinine, and in doubtful cases the diagnosis was also made by this means. Now we are not only able to make a positive diagnosis by the microscopic examination of stained blood, but we have also learned through the microscope to differentiate between the tertian, quartan and crescentic types of malaria. The microscope has also taught us which form of the disease responds most readily to the administration of quinine. Consequently the disease is now treated more intelligently and rationally, and the unnecessarily enormous dosage with quinine formerly employed has been abandoned.

As Dr. Sondern had shown in his paper, we could hardly underestimate the importance of clinical microscopy in the study of blood diseases. About ten years ago some of us were rather skeptical when Dr. James Ewing said that he was able to diagnose some diseases by examining stained

blood under the microscope. Now, most of us are able to do the same. The use, study and interpretation of stained blood smears, together with the aid of the haemocytometer and haemoglobinometer, have been of invaluable assistance to the clinician. To appreciate how great has been the achievement in this direction we have only to recall that one of the first reliable enumerations of the red blood corpuscles was of comparatively recent date, and that it took Vierordt a whole week to make this count. It is because of this progress that the anaemias are now fairly well classified. A great advance was the recognition and differentiation of the lymphatic and splenomyelogenous types of leukaemia. The diagnosis of pernicious anaemia by means of the blood picture is highly interesting. About one month ago Dr. Heiman had under his care at Mount Sinai Hospital a case of idiopathic pernicious anaemia, with all the characteristic signs and symptoms of this disease. With one exception, the blood findings also were those of an advanced pernicious anaemia: the haemoglobin was 10%, the red cells numbered 500,000 and the leucocytes 6,000. The exception referred to was the absence of nucleated red cells in the blood, but this was easily explained at autopsy. The bone marrow, instead of being red and lymphoid as in the normal condition, was found by Dr. Libman to be yellow and aplastic in character; the fact that the marrow had been undergoing fatty degeneration easily accounted for its failure to regenerate red cells.

In passing, he wished merely to mention some of the subsidiary uses of haematology. No one now doubts the value of the Widal reaction and the white blood count as confirmatory aids to diagnosis in typhoid fever. The leucocyte count is of diagnostic aid also in certain surgical conditions and pulmonary affections. In a recent article on "Leucocytosis in Pneumonia and Empyema in Children", he had shown that in certain cases of lobar pneumonia in children complicated by empyema the leucocyte count is of great help in hospital practice. Let us say that the crisis and drop in leucocytosis have occurred, but there are still signs at the base of the affected lung exciting our suspicion that an empyema will supervene. In such cases white blood cell counts should frequently be made at regular intervals; a sharp rise

in the count, provided that other causes of leucocytosis can be excluded, is then strong presumptive evidence of a complicating empyema. The leucocyte count is also of aid in differentiating between epidemic cerebro-spinal and tubercular meningitis. Also worthy of mention in this connection is the value of the blood culture in certain forms of septicæmia, in typhoid fever, and in malignant endocarditis. Enough has been said to show that the methods employed in blood examinations are of sufficient value to deserve more general recognition. In addition to being of great value as a confirmatory aid to diagnosis and differential diagnosis, in some cases the blood picture alone is sufficient to make the diagnosis.

DR. WINFIELD AYRES said that he differed with Dr. Heitzmann and agreed with Dr. Bishop in holding that the microscopic work should be done by a specialist and not by the general practitioner. The latter has not the time to devote to it and an accurate diagnosis is more easily reached by the aid of the microscopist than when one examines his own specimens. As an instance of the close diagnosis that is possible with the microscope in the hands of the expert he would cite one case. The patient was sent to him for diagnosis. His urine was highly tinged with blood. The cystoscope showed a normal bladder, clear urine issuing from the left ureter and bloody urine from the right. He passed a ureteral catheter on the right side and, encountering an obstruction at six inches from the bladder, withdrew the catheter and passed a wax-tipped bougie. He obtained a scratch, thus demonstrating a calculus lodged at six inches. He then passed a catheter well up to the renal pelvis and obtained urine free of blood. He collected the urine from each six inches as he withdrew the catheter, and when the eye was about four inches from the bladder the urine was tinged with blood. This demonstrated that the hemorrhage came from the ureter at about six inches. Thinking he had a good chance to catch Dr. Heitzmann, he sent the mixed urine for examination. His report was: "Catarthal pyelitis with intestinal nephritis. There is nothing to indicate where the blood is coming from, but suspect calculus lodged in the ureter."

Stated Meeting, December 11, 1905.

SYMPOSIUM ON PNEUMONIA.

INTRODUCTORY,

by the President, DR. THOMAS E. SATTERTHWAITE:

The Council of this Association needs no explanation to its members for devoting an evening at this season to pneumonia. We are approaching the period when it promises to be rife in all our cities, and we should be prepared to know the "last word" on the subject. We know that pneumonia at times appears to take on the character of a dangerous epidemic: one of our most fatal scourges. In a western city last season it carried off more victims than tuberculosis. In another city, of about a thousand cases of pneumonia the fatality was upwards of 50%. These figures, explain them as we may, were doubtless correct. But even if the majority of these were secondary to some other disease or infection, the facts still remain; and they bring up the question of whether or not pneumonia should be a "notifiable disease." For many years there has been evidence that it may at times be a contagious affection. But how far is it contagious? And under what conditions should pneumonia patients be quarantined? In this connection it would be interesting to know how far this contagious character is observed in the rural districts or in scattered settlements. Inquiring into the cause of the disease, have we one or several etiological factors? Other questions that suggest themselves here are, What is the relation borne by pneumonia to occupation, the season of the year, age and social conditions? Even in plain lobar pneumonia have we discovered that there is but a single infecting agent? Another question is the limitation of the disease. Is it self-limited? And, if not, what are the remedial agencies that are specially applicable to the different forms of the disease? How much may we expect from massive doses of mercurials, the application of heat or cold, inhalations, quinine, salicylates, or creosote, etc.?

It has been maintained by some that the solution of these questions can be better solved by the practitioner than the bacteriologist or chemist. Evidently the majority of the problems do not come within the field of the laboratory worker. And it is fortunate therefore, I think, that while we shall hear from the laboratories, most of the speakers of the evening are both practitioners and teachers of medicine, whose experience entitles them to speak with authority. It will add to the value of our proceedings of this evening also to feel that we have an opportunity of hearing what is known of pneumonia, and the methods that are used in treating it, *outside* of our particular city limits.

The first paper was by DR. JAMES M. ANDERS, Professor of Medicine, Medico-Chirurgical College, Philadelphia, on

THE PROPHYLAXIS OF PNEUMONIA.

Although the natural methods of diffusion of the pneumococcus are imperfectly known, he said, the report of the Medical Commission for the Investigation of Acute Respiratory Diseases of the Health Department of New York contains the results of investigations which tend to throw fresh light on this important problem. Until the present, purely empirical prophylactic measures have been for the most part advised and more or less generally employed. The results of experimental studies on the pneumococcus, carried out under the direction of Drs. W. H. Park and A. W. Williams, have confirmed the opinion previously held by most authors that pneumonia should be considered to a certain degree contagious. Another fact indicated by these researches is that the virulence of the pneumococcus may be rapidly increased for a susceptible species of experimental animal by successive passage. It is generally believed that the principal source of the causative organism is the sputum of pneumonia patients, but since the virulence of the pneumococcus may be quickly increased, as shown by Park and Williams, and since the organism is quite prevalent in normal sputum, the latter source must also be reckoned with in considering measures of prophylaxis. It may be safely assumed that direct transmission of the virus (contagion), as exemplified in house epidemics, may occur.

Dr. Anders' own previous investigations led to the inference that the prevalence of pneumonia is much influenced by indoor conditions, especially such as obtain during the cold season. This view was corroborated by collective investigations, which showed that there is an evident tendency to a preponderating prevalence of the disease in over-crowded districts and among the impoverished classes. While most cases of lobar pneumonia occur among persons coming into more or less intimate contact with sputum containing the pneumococcus, the question of individual predisposition is scarcely subsidiary in point of importance.

Effective prophylaxis embraces four main objects: (1) The thorough disinfection of pneumonic sputum, as well as that of healthy persons, including the secretions of the upper air-passages; (2) Isolation of the patient, especially from the debilitated, and disinfection of the sick chamber, together with its contents, after death or recovery; (3) The removal of personal predisposition; (4) The introduction of certain public measures. In speaking upon the third point, he said the removal of bodily receptivity to the pneumococcus infection is a prime requisite in our effort to limit the dissemination of the disease. Again, granting that the increasing prevalence of visceral degenerations, particularly of the cardio-vascular system and the kidneys, may account in some degree at least for the increasing prevalence and morbidity of pneumonia, it follows that successful prophylaxis must begin with a change in the habits of the American people. The social characteristics and customs and strenuous methods of business activity need to be radically improved in order to enable the predestined victim of pneumonia to escape his sad fate. In speaking of public measures of prevention, he said it was gratifying to observe that the Commissioner of Health of New York has issued a drastic edict against spitting on the sidewalks, and that already a decrease in the number of cases of pulmonary tuberculosis has been noted in certain districts in which the law has been enforced. What is true of consumption applies with equal force to pneumonia, since the itinerant cases of the former find their counterpart in well persons, or those suffering from catarrhal conditions of the respiratory tract, who harbor the pneumococcus.

In conclusion, he said that the *status praesens* of medical science with reference to this subject and the facts now presented warrant the following inferences:

- (1) Certain degenerative lesions, especially of the cardiovascular system and the kidneys, have shown an increased incidence during the last two decades, and these are found to be associated or antecedent conditions in many cases of pneumonia; hence are probably potent predisposing factors.
- (2) The indoor conditions during the cold season favor multiplication and propagation of the pneumococcus, and at the same time tend to diminish resistance to infection by the specific organism.
- (3) The aged are peculiarly susceptible to pneumococcus infection; hence their bodies should be kept as strong and healthy as possible, especially during the pneumonia season.
- (4) To overcome the predominating factors in individual predisposition, special attention must be paid to the subject of ventilation, to appropriate clothing, and to the avoidance of agencies which cause degeneration of the heart, vascular system, and kidneys, as alcohol, social excesses, an over-strenuous business or professional life and the like.
- (5) The sputum is the principal source of infection, and should be thoroughly disinfected as soon as expectorated, and then destroyed by burning. Public expectoration should be restricted in every possible manner.
- (6) A large proportion of the general populace harbors the pneumococcus in the naso-pharynx, and this is especially true in families and institutions in which cases of pneumonia have occurred. Hence thorough cleanliness and disinfection of these chambers should be carried out during the pneumonia season, and more particularly in the case of persons more or less exposed to the virus of the disease.
- (7) Means to prevent dust from accumulating and its daily removal from the home and the city streets are imperatively demanded.
- (8) Public health authorities should be given full executive power to carry out rules and regulations relative to pneumonia, looking to the prevention of its spread, as in the case of other infectious and contagious diseases. They should also carry on a campaign of public education.
- (9) Measures of prophylaxis must accord with intelligent public opinion before they can be rendered wholly efficient either by municipal or private authority.

DR. REYNOLD WEBB WILCOX, Professor of Medicine,
New York Post-Graduate Medicine School and Hospital,
spoke on

SOME QUESTION IN DIAGNOSIS.

He said the mortality of pneumonia had been markedly reduced during the past six years, and in order to reduce it still further an early recognition of the disease was necessary. Supposing, for example, the physician was called to see a robust individual with a chill, or an old person who complained of sudden unaccountable weakness, a child with a convulsion followed by pain in the abdomen, or a patient who complained of soreness on one side of the chest or the other, how soon would it be possible for him to determine whether or not he was dealing with a case of acute infectious pneumonia? The temperature, or an examination of the sputum, would not help him, nor could he expect to find the classical physical signs at that stage of the disease. In making the diagnosis, he would have to depend largely on minor conditions. A careful examination of the affected side of the chest would show that the pause normally occurring after expiration was shortened, with increased vocal resonance, particularly of the whispered voice, perhaps, over a small area. The affected lung had lost some of its normal elasticity. The heart sounds might be found to be transmitted over a larger area, or there might be an accentuation of the pulmonic second sound. In dealing with a long-continued pneumonia, the diagnosis could often be established by the more modern methods of investigation, rather than by the older rules laid down in the textbooks, which might be regarded more or less in the light of traditions that had been handed down to us. In differentiating between long-continued pneumonia and typhoid fever, the diminution of the chlorides in the urine on the other hand, and the results of the Widal reaction on the other, would often clear up a doubtful case. The speaker also called attention to the fact that in certain cases of cerebro-spinal meningitis, the force of the disease seemed to expend itself on the lungs. In such cases the low pulse rate, in connection with a high temperature curve, the results of lumbar puncture, the presence of Kernig's sign, and other local symptoms would help clear up the diagnosis.

A paper on
**THE PRESENT TREATMENT OF PNEUMONIA, AS EXEMPLIFIED
BY THE ROUTINE TREATMENT OF THE DISEASE IN FOUR
OF THE LARGE NEW YORK HOSPITALS,**

was read by DR. HENRY P. LOOMIS, Professor of Therapeutics and Clinical Medicine, Cornell University.

The fact, he said, that pneumonia to-day occupies first place in mortality statistics as the cause of death arrests our attention. In New York the statistics of the Board of Health show that the mortality curve of pneumonia has passed that of tuberculosis, and more people die from pneumonia every year in Greater New York than from consumption, which until the last few years has always been considered as the great scourge. A satisfactory explanation of the increase of pneumonia is very difficult. Has the type of the disease increased in severity? Have the local conditions favoring its development become worse? Or has the treatment of this disease known no advance? These are questions that must interest every medical man. Personally he believed the treatment of pneumonia at the present day to be the least satisfactory of that of any of the acute diseases.

At the suggestion of the President, he commenced this fall a series of personal investigations of the methods in vogue in the treatment of pneumonia in four of our largest hospitals. In the large metropolitan hospitals we may look more than anywhere else for the most advanced methods of treatment, as here every new suggestion in therapeutics is tried, weighed, and discarded or adopted. Accurate statistics are kept, thus furnishing data for approximately reliable and impartial conclusions, and all under the critical eye of the young and enthusiastic members of the house staff, who, before their two years are up, are well able to determine the treatment producing uniformly the best results. The hospitals taken for comparison were the Presbyterian, Roosevelt, New York and Bellevue. To obtain the details of treatment from the different hospitals, he had typewritten a careful series of questions. These were answered in writing by the different house physicians; then personal interviews with the medical staff of each hospital were had, and he found that in many instances one or more of the visiting

staff had verified the answer to the questions and had added elaborations of their own. He was surprised to find from these investigations what a uniformity there was in the treatment of pneumonia in the different hospitals. This is not seen in any other disease, with possibly the exception of acute rheumatism.

In all of the hospitals, calomel, usually in small, repeated doses and followed by a saline, is given the patient on admission, and the calomel is repeated during the course of the disease, if necessary. Local applications to the chest are made only when the pain and distress are intense. In the New York and Bellevue ice poultices are sometimes used. During the height of the disease milk is given exclusively or as the principal article of diet, and at Roosevelt patients are urged to drink water largely. The treatment of fever varies more than anything else, although a temperature of 104 or over is not necessarily regarded as an indication for special treatment. Cold packs to the anterior portion of the chest, tepid sponges, and alcohol sponges are variously used. Tub baths are never given at Bellevue or Roosevelt; at the New York, very seldom; and at the Presbyterian only in alcoholic cases with nervous symptoms. Codeine and heroine are the principal drugs employed to control cough, and trional, veronal and codeine for insomnia. Pulmonary oedema is treated by cupping and hypodermatic injections of adrenalin or atropine, together with increased stimulation. Oxygen is not given as much as formerly in any of the hospitals. The three cardiac stimulants which are used in all are alcohol, strychnine and digitalis. At the Presbyterian Hospital alcohol is employed less generally than formerly; in the other three quite as much as it was two or three years ago. Nitroglycerin is used only very occasionally. During the past year or so a number of drugs have been tried and discarded, as potassium iodide, salicylates and pneumococcus serum. Creosote is still sometimes given, especially at Roosevelt and the Presbyterian, but the staff of these hospitals state that they can see no results from its use. At Roosevelt saline injections into the rectum are employed, especially in alcoholic cases and those where nutrition is failing. Eight ounces of a normal saline solution is introduced into the rectum through a funnel attached to the

end of a catheter. These saline injections are given about once in four hours, are well retained, and the staff state that in many cases marked beneficial results are obtained. Dr. Loomis thought this treatment would warrant more extensive use.

Before closing he said he would like to make two or three statements in reference to the treatment of pneumonia which clinical experience warranted him in considering of some value. They were as follows:

First. A plea for the more general use of morphine hypodermatically in the early stage of the invasion, a stage in very many cases accompanied by not only the shock to the nervous system from a sudden and overwhelming toxæmia, but the distressing pain, often amounting to agony of a pleurisy, associated with the development of the pneumonia processes. The shock to the nervous system in many cases is intense. Patients generally rally from this condition, but often with a marked cardiac weakness. I believe if we made a routine practice of giving cases presenting these symptoms, one or two full doses of morphine hypodermatically, we would not only relieve the pain but would minimize the nervous shock, and certainly, remembering how morphine sustains the heart, we will start our patient on the course of the disease in a very much better condition. Morphine later in the disease is but seldom required, and in my opinion must be used then with the greatest care.

Second. If any criticism can be offered of our present treatment of pneumonia during the past few years, it is along the line of the injudicious and often unwarranted use of alcohol. I have often questioned whether if we did away with alcohol entirely, the mortality would not remain about the same, and possibly a great improvement be noticed. During the last two years in my hospital service at Bellevue and the New York, I have given very little alcohol, not one-twentieth of the amount I gave formerly, and I feel that the results obtained warrant me in cutting its use down still more. The ordinary cases certainly, it seems to me, do better without it. My experience has been that in the intense alcoholic cases, strychnine hypodermatically gives very much better results than alcohol, and these are the class of cases in

which alcohol is usually given in very large quantities. In the various institutions for the cure of alcoholism we all know how, on the sudden withdrawal of alcohol, they hold the heart by hypodermics of strychnine, even in the most desperate cases. An exceedingly good cardiac stimulant, which I have found to take the place of alcohol in pneumonia, is the old-fashioned spirit of Mendeferus, "Liquor ammoniæ acetatis." I have been surprised to find how universal is the use of this drug in pneumonia by the old country practitioners. My attention was first called to its use at a meeting of a County Medical Society in Western New Jersey a few years ago. The drug, as is well known, is a good diuretic and diaphoretic, affects temperature, and acts as a mild stimulant. I claim no specific action for it, but if it does not do any good it will do no harm, and I would like to bring it to the attention of the members of this society.

Third. The last point which I would make, and possibly the most important, is that more of our patients are damaged than helped by the promiscuous drugging which is still too prevalent. I believe if fewer drugs were given in pneumonia a very much larger number of uncomplicated cases would recover with no medical treatment beyond an occasional laxative. The mortality to-day in the various hospitals seems to me unusually high. In the four New York Hospitals which I have investigated the mortality varies from 35 to 40 per cent. At the Presbyterian in six hundred cases the mortality was 34.8; Roosevelt, from 1903-5, the mortality was about 40 per cent; New York, from 1893 to 1894, 38 per cent.

DR. HOBART A. HARE, Professor of Therapeutics, Jefferson Medical College, Philadelphia, read a paper on

THE TREATMENT OF PNEUMONIA.

The chief points in Dr. Hare's paper consisted in his urging that remedies be administered in pneumonia only when very definite and clear indications for their use were present. In many instances, spurred by the anxiety of friends, the physician is inclined to give medicines continually throughout the entire course of an attack of croupous pneumonia, forgetting that remedies which are powerful enough

to do good may, under certain circumstances, be powerful enough to do harm. Further, it must be recognized that our means of treatment cannot be curative, but directed to the support of the system, and the regulation of its functions, until the disease has run its course.

In many instances rapidly-acting, but fleeting, circulatory stimulants, such as Hoffmann's Anodyne and aromatic spirit of ammonia, are all that are needed to bridge over temporary periods of depression. These remedies are not advantageous when used for a long period of time, as they lose their effects, and are apt to disorder the stomach. If digitalis is employed it should always be a preparation which has been physiologically tested, since different specimens of digitalis often vary greatly in their physiological activity.

Of the remedies which are best for the combating of collapse and circulatory failure, strychnine and atropine undoubtedly rank highest, the atropine being particularly valuable in those cases in which there is a gaseous pulse with relaxed blood-vessels. Digitalis often fails because the heart muscle has undergone degeneration as a result of the toxæmia, or because the high temperature of the disease prevents it from exercising its physiological properties. Mild alkaline diuretics for the purpose of flushing the kidneys are useful.

In conclusion, the speaker once more urged upon his hearers the necessity of avoiding medication except in the presence of very direct indications for the use of certain drugs. But, on the other hand, he advocated the free administration of remedies which were indicated to meet special conditions arising in the course of the disease. While, on the one hand, we must not be too active, it is an equally great mistake to be unduly passive in the presence of such a grave illness. Nitroglycerin, often used in pneumonia as a cardiac stimulant, is always abused under such circumstances, since it is a circulatory relaxant and never active as a true stimulant. This is a point overlooked by many members of the profession. The only indication for the employment of nitroglycerin in pneumonia is when the arterial tension is unduly high and the heart is therefore called upon to do an excessive amount of work.

DR. J. MADISON TAYLOR, formerly Professor of Diseases of Children, Philadelphia Polyclinic, read a paper on

THE ROLE OF SALINE SOLUTION IN THE TREATMENT OF PNEUMONIA.

He presented a résumé of the facts relating to the position of the normal salines of the blood plasma and its contained autoprotective potentialities, a recognition and use of which is capable of furnishing a beneficial agency in overcoming infecting processes. Modern physiological pathology has made good the assumption that the immunizing antibodies appear in the blood whenever an infectious disease terminates in recovery, and this, he claimed, is our greatest weapon in overcoming pathogenic elements.

A few observers have called attention to the value of saline solution designed to supply the enormous loss in the essential constituents of the plasma which occurs during febrile states. These, however, have recommended the use of the measure only late in the disorder and in desperate cases. Dr. Taylor called attention to the extreme importance of following the advice of Sajous to employ it just as soon as the disease is recognized, in order to insure the full efficiency of the blood's antibodies—i. e., the body's autoprotective powers. Saline solution, used early, preserves the blood's normal fluidity, renders normal osmosis possible, and gives free sway to the immunizing process. He believes that to delay in the use of these salines is just as dangerous as to delay administering antitoxin in a case of diphtheria, and, moreover, that in infections the blood suffers such rapid depletion of saline elements (the effect of which is to impair the efficiency of, and finally arrest, the protective functions of the organism) that this constitutes one of the most active causes of death.

His practical recommendation was to begin from the outset, in pneumonia and other infectious fevers, the internal use of saline solution, especially containing sodium chloride and the other saline constituents of the blood. The use of these salines by hypodermoclysis or enteroclysis has been recently shown by a number of observers, acting upon Sajous's recommendation, to be of great efficiency when used early. The employment of the saline drink has been shown

by Todd and by Dr. Taylor to be of equal efficiency and not at all inconvenient or disagreeable. A lemonade, each glassful (6 to 8 oz.) of which contains 10 gr. of sodium chloride and 5 gr. of potassium carbonate, with a teaspoonful of lemon juice, is given every two hours to adults. The suggestion, he claimed, is based upon so much of reasonableness and simplicity that it would be highly advisable that physicians should give this measure a fair trial.

DISCUSSION.

THE PATHOLOGICAL HISTORY OF PNEUMONIA AND THE SIGNIFICANCE IN THIS DISEASE OF THE ANATOMICAL CHARACTERISTICS OF THE LUNGS.

DR. ANDREW H. SMITH said: Allow me to suggest a concept of an average case of pneumonia. Granted, (1) that the patient, to begin with, is one of the multitude who have pneumococci on the mucous surface of the air-tubes, when, the conditions being unfavorable for growth, they are harmless; (2) that at some point nature's provision for keeping foreign particles, including pneumococci, out of the air-cells fails; (3) that perhaps only a single pneumococcus finds its way to the pavement lining the infundibuli and the air-cells, where the conditions for growth are very favorable; (4) that from some cause, local or general, the vital resistance has been lowered. These four postulates being granted, the succession of events will be as follows: A peculiar specific irritation will be set up, in response to which a peculiar fibrinous exudation will take place into the air-cell. This exudate will constitute a culture-medium exactly fitted for the growth of the parasite, which will immediately begin its multiplication and the formation of its appropriate toxin. Such toxin, being taken up into the blood, will produce systemic effects proportionate to its amount and virulence. The exuded material, constantly increasing in amount, will overflow into adjacent cells and adjacent lobules, carrying the infection with it, until a sufficient area is involved to give rise to appreciable physical signs. The proportion of toxin in the exudate increases until the latter becomes unfitted to act longer as a culture medium, when the further growth of the parasite in that

immediate locality will cease. Meanwhile the presence of the exudate, aided by the coagulating effect of the toxin, will have brought about arrest of circulation in the capillaries derived from the pulmonary artery, and the function of the part will be completely suspended. So long as fresh areas of lung are being invaded, so long will the systemic disturbance continue; but when the formation of toxin in the zone last invaded has ceased, there will be a cessation of the general toxic phenomena and a fall of temperature, marking the crisis.

The local conditions in developed pneumonia are such that gangrene would be inevitable were it not that the nutrition of the lung is maintained by a circulation distinct from that by which the function is carried on. While the capillaries derived from the pulmonary arteries are completely occluded for many days in the affected part, the bronchial arteries are scarcely implicated, and the nutrition remains intact. In pneumonia the significance of this double circulation was overlooked until I drew attention to it in the early nineties, and even now is very generally ignored. So, too, the difference between the columnar epithelium of the tubes and the pavement epithelium of the air-cells, in relation to the growth of the pneumococcus, is a factor of transcendent importance in the concept of pneumonia, since this makes it clear how it is possible to have pneumonia ever present potentially, and yet continue to escape it actually.

As to what constitutes pneumonia, I contend that a single pneumococcus lodged in an air-cell, and causing there its specific irritation and consequent exudation, presents all the essentials of the disease. It matters not if ten minutes later the organism is swept away by the exudate; the patient will have had a pneumonia, if only a monococcic one. Or if later the bronchiole terminating in the lobule first invaded becomes blocked, and the further spread of the infection is prevented, the patient may escape with a unilobular pneumonia; but he will have had a pneumonia all the same. Indeed, there is reason to suspect that such abortive attacks are very common. What, then, becomes of the notion that the disease is at first general, becoming localized afterward? According to this view an infecting principle from some unknown region settles down upon the victim and, after riot-

ing about for a while in the system at large, at last selects the lung as a convenient habitat. The reason assigned for such a hypothesis is that the general symptoms commonly precede the local signs; which is like contending that the fire is an after-effect of the smoke because we commonly see the smoke first. Has it never occurred to those who accept this view that the fever thermometer is a more sensitive instrument than the stethoscope? If any one takes exception to this criticism, let him point out in the average pneumonia the extra-pulmonary source from which the system is infected while as yet the lung remains free.

DR. WILLIAM H. THOMSON made some remarks on

THE PATHOLOGY OF CHILL.

Catching cold, he said, is such a universal experience that for this very reason it is but little thought of, and yet it is doubtful if there be a more frequent real cause of death than it. In the first place, it is evident that catching cold is a wholly different thing from being chilled by cold, that is, from a general cooling of the body, for its most typical as well as disastrous results may occur while a person sits with his entire body wrapped in winter clothes, but the feet meantime soaked, because he went out without his rubbers into a melting snow. A cold draught on the back of the neck, in a heated audience room, may, according to individual susceptibility, cause a rhininitis, a pharyngitis, a bronchitis, a pneumonia, a pleurisy, an enteritis, a cystitis, or an attack of rheumatism. How does such purely local impression of cold occasion such widely distributed organic mischiefs?

The answer must be looked for chiefly in the direction of the nervous system. Probably one of the first clews toward the solution of this problem was furnished by an observation of Cohnheim's that, after long-continued anaemia of the rabbit's ear by ligature, the blood-vessels became so permeable that the restoration of the normal circulation was followed by the pronounced oedema of all the tissues and degenerative changes in their cells. Later Overbach found that clamping the renal arteries of dogs for only forty minutes was followed by albuminous urine for twenty

days; showing that the textural damage caused by arrested blood supply is due to arterial, and not venous, anaemia. We may conclude, therefore, that any local shutting-off of arterial blood will promptly induce nutritive changes in the territory of that arterial distribution which are at least analogous to the local inflammatory changes which we trace to "catching cold." The arterial flow, in distinction generally from the venous, is under the regulation of a special department of the nervous system; a fact which can be well shown in the circulation of organs which are in pairs. But investigation shows that there are many regions of the body quite different from pair organs which are in close vaso-motor, association with one another. Thus, the arteries of the pelvic viscera are very sensitive to impressions of either cold or heat to the feet, cold there arresting menstruation and dry heat being the best of emmenagogues. So the nape of the neck is a great centre for similar radiations. There is, however, one great law of vaso-motor association which is of wide application, namely, that the cutaneous nerves are always in association with the vaso-motor nerves, controlling the circulation of the parts and organs covered by that cutaneous area. Not only do surface impressions, therefore, react according to their kind upon the circulation of the internal organs, but, *vice versa*, circulatory derangements, particularly of the inflammatory kind, of the internal organs produce hyperesthesia of the corresponding skin areas. A man with a bad cold in his head knows when the door is left open down-stairs, without going there to look. Hence, now that we know that all we have to do to check an internal bleeding, such as postpartum hemorrhage, is to dash a cold ether spray on the abdomen, thereby causing the deep arteries to contract to the complete shutting-off of blood, so we seem to have in the effects of a local surface chill that mechanism for inducing a local arterial anaemia within, which, on re-establishment of the circulation will cause an oedema and inflammatory changes quite comparable with those in the ear of Cohnheim's rabbit. If the affected organ be very delicate in its structure, the derangement may last for days, as in the kidneys experimented upon by Overbach.

Finally, a new and most important aspect of this subject has been recently brought to our notice by the experiments

of Orth and Wyssokovitsch, which show that traumatic lesions produced anywhere will cause a local predisposition to infective processes. Our own colleagues, Drs. Meltzer and Cheeseman, have carried this principle out to the completest demonstration, relating, in a paper read before the American Association of Physicians, experiments in which slight wounds inflicted on various viscera, such as the mucous membrane of the uterus, became afterward almost the sole seats in the body for the growth and development of bacteria, injected in the first instance in a vein of the ear. Our bacterial enemies, therefore, are always ready to find some injured place in us, and the damage of a small internal locality caused by the reflex action of the vaso-motor irritant, cold, on the surface is undoubtedly often the first step in a serious infarction from such a foe as the pneumococcus, which may have been waiting for weeks or months in the mouth, unable to do any mischief until an entrance was made for it by "catching cold."

HIGH MORTALITY IN HOSPITAL CASES.

Dr. Thomson then went on to speak of the greater mortality from pneumonia in hospital patients as compared with those in private practice. The carrying of a patient in the active stage of the disease, perhaps one or two miles through the streets, to the hospital was itself a source of the gravest danger. Absolute rest in the recumbent posture was an essential in the successful management of pneumonia, and he always forbade his house staff to raise a patient for the purpose of examining the chest. In bad epidemics it was not uncommon for patients to die within two hours after admission. In the fatality of pneumonia, as of cerebro-spinal meningitis and other diseases, the stage of the epidemic at which the case occurred was an important factor. A fatal result, he had observed, was much less likely to occur when the epidemic was declining than when on the increase or at its height. Fifty years ago he was a student at Glasgow when Hughes Bennett was condemning venesection. He remembered that he lost only one out of twenty-three pneumonia patients, and they were treated with potassium acetate and sweet spirit of nitre. His own opinion was that our present treatment of pneumonia was not as

successful in its results as that of fifty years ago. Whatever else we might be doing, it was very evident that we were not giving the antidote to the disease. The true antidote had yet to be discovered.

THE VALUE OF ALCOHOL AND CREOSOTE.

DR. BEVERLEY ROBINSON said he had certain fixed notions in regard to pneumonia, but that he would restrict himself to one or two points. In regard to the prophylaxis of the disease, he agreed substantially with Dr. Anders. The mortality statistics quoted by Dr. Loomis, which he had obtained from the records of four of the large hospitals in this city, did not furnish a fair indication of the death-rate of pneumonia in private practice. It was a well-known fact that many of these patients were not transferred to the hospital until the third, fourth or fifth day of their illness, at a critical stage, and their fright and alarm at being taken away from home helped to overwhelm the much weakened heart. The patient's surroundings and manner and condition of life also had much bearing upon the prognosis, and arterial changes were very common among hospital patients. In a certain number of cases of pneumonia the toxæmia was so overwhelming that a fatal outcome was rapid and certain. Others, because of their vitality, or because the toxæmia was of a milder form, would recover with the aid of little or no medication, or in spite of all medication. Dr. Robinson said that when a stimulant was indicated in these cases, he favored alcohol in the shape of brandy or whiskey, and he emphasized the fact that it should be of the best quality obtainable. Clinically, he believed that alcoholic stimulus deserved a high place in the treatment of pneumonia, and that, under certain conditions, it was the very best remedy, for which there was no substitute. He also placed much reliance upon the proper use of creosote inhalations, not only in the treatment of pneumonia itself, but as a prophylactic measure in severe colds, with threatening pneumonia. He certainly would not regard creosote as a specific, but he believed that it was sometimes a great help, just as alcohol was, or as digitalis was. As to the remedy or remedies to be employed, everything depended upon the conditions existing in the particular case.

THE USE OF MINUTE DOSES OF MORPHINE.

DR. GEORGE B. FOWLER said that in ordinary cases he used practically no medication, his aim being simply to make the patient as comfortable as possible. When there was pain or restlessness he considered very small doses of morphine of special value, giving 1-40 gr. as often as necessary. In cases where the conditions demanded their use, he gave alcohol, strychnine and sometimes digitalis. There was no specific for this disease, and in his treatment he simply carried out those measures which his own experience had shown him to be the most satisfactory.

DR. ANDERS said that degenerations of the heart and kidneys were often observed at the post-mortems of pneumonia cases. At such autopsies at the Philadelphia Hospital he had found that there was a large percentage of interstitial nephritis. As to the importance of absolute rest, he believed there was no other disease in which this was so essential to the welfare of the patient, and he did not allow his own patients even to turn in bed without the assistance of an attendant. Pneumonia was a toxæmia and we should deal with it like other toxæmias. Elimination should always be aimed at, through the kidneys, the bowels and the skin. The kidneys were the great eliminating channels, and water, given freely in the intervals between the times of feeding, was a useful diuretic. He was also in the habit of employing tepid sponging, not for the purpose of reducing temperature, but to promote elimination through the skin. In sthenic cases, particularly in country patients, he would urge the advisability of venesection, followed by saline infusion. These measures were likewise of service in cases attended with œdema, and in several instances of this kind he had been much gratified with the success attending them.

Annual Meeting, January 8, 1906.

PRESIDENT'S ADDRESS.

DR. THOMAS E. SATTERTHWAITE, having been re-elected President, delivered the following address:

Fellows of the Association: You have re-elected the old officers whose terms have expired. From an experience of two years I may say truthfully that they have served faithfully and well. Our Council meetings have always been well attended and harmonious. We have never been without a quorum. When I accepted the nomination for a second term, which I did with much reluctance and trusting up to the last moment that some one else would be selected for the position, I expressed the hope that the old officers would be re-elected. It has been generally recognized that the success of this Society, during my term and in the previous years, has been due to the efficiency of the Council and especially to the enterprise of our Recording Secretary.

I am not going to make a formal address. We have more serious matters before us in the scientific business of the evening. But I will occupy a few minutes in outlining what, I take it, is the present policy of the Association. With a membership drawn from all the Boroughs of this great city, it seems absolutely necessary for a young society like ours to offer at its meetings rather *more* than the usual attractions of one of the large societies, and at the same time to take up topics of very general interest. In order to carry out this plan *symposia* were instituted, and nearly all of the meetings of the past two years have been of this character. Every department of medicine and surgery has had its special field-day. Live topics have been allotted to the best men available, whether in Washington, Baltimore, Philadelphia, New Haven, Boston, Buffalo or Albany. It may be interesting to know that more than twenty distinguished medical men from other cities, most of them authorities at their homes, have been invited here, and have come either to read or to discuss papers. At the same time we have not hesitated to call upon the foremost specialists or gen-

eral practitioners of our own city, whether Fellows of this Association or not. Hence, the reading of our transactions make one acquainted with a practical *résumé* of the best kind of work being done in each department, while such journals as the Medical Record, the New York Medical Journal and the Boston Medical and Surgical Journal promptly publish our proceedings. In this way the public is informed of the progress made in the various branches of medicine and surgery months, or even a year or more in advance of the *résumés* which are issued by the medical publishers. As a result of the high character of our scientific work, it may be mentioned that in one instance the entire proceedings of an evening have been made up into a book, which is now being published by a prominent house of this city. A layman, happening *accidentally to hear of our symposium* on Nutrition, held in October last, attended it in company with a well-known publisher, and after the meeting offered voluntarily to publish the proceedings in full in book form, at his own expense.*

But it is not intended to minimize the work of the rank and file of our own members. Every one who has a paper which is a real contribution to his department, whatsoever that may be, can have an opportunity to present it at the proper time. No paper has been refused, though it may have happened that the reading of a paper has necessarily been postponed to the evening when it would properly and naturally fit into a special symposium.

So far as the financial condition of the Association is concerned, we close the year, as our Treasurer's report has shown, with no debts and a small balance in the treasury. It is not the purpose of the Council to recommend any increase in the present modest dues, \$3.00; nor is there any idea of having assessments. We need, however, a rather larger membership. At present it is something over 650. With the number increased to the limit prescribed by the By-Laws, 750, and the corresponding increase in our balances, we would be able to secure better accommodations for our meetings. At present our finances hardly warrant any further outlay in this direction; but if each of the Fellows

*This volume will shortly be issued by the F. A. Stokes Publishing Company.

present here to-night would send into the Secretary a single good name, recommended by him for membership, we would be able to make permanent arrangements with the Academy of Medicine for the use of the large Hosack Hall for all our meetings.

SYMPOSIUM ON DISEASES OF THE UPPER AIR PASSAGES.

The first paper was by DR. W. FREUDENTHAL on
RECENT ADVANCES.

In the field of etiological research he said that much of importance had been published in recent years, and we now knew that several parts of the upper air tract were the portals for the entrance of infectious organisms. Tuberculosis and rheumatism were mentioned in this connection. Too much stress, however, had been laid upon the established fact that the faucial tonsils are found to be often involved in those two diseases, from which it was concluded that they constituted the main portals for many infectious microbes. Dr. Freudenthal said that he was not opposed to the removal of diseased tonsils, whether they were hypertrophied or not, but he could not agree with Gürich's claim ("die tonsillare Lokaltherapie des Gelenkrheumatismus"), made at the last Congress of Internal Medicine, held at Wiesbaden, in 1905, that the tonsils are the main portals of any infection, and require removal under all circumstances.

The assertion of Gürich, that during the past five years he had cured the great majority of his rheumatics by so-called tonsillary therapy, seemed too optimistic. The speaker could not believe that many would adopt the practice of removing a tonsil when nothing pathological could be found about it. The danger lay in over-doing things, and he mentioned the case of a lady suffering from advanced pulmonary and larynginal tuberculosis who at a popular resort was put under general anæsthesia and had one slightly enlarged tonsil radically removed. In consequence of this she lost her life from profuse hemorrhage. As the tonsils could be so readily examined, most physicians did not look to

other parts of Waldeyer's ring for initial infections. A number of years ago Dr. Freudenthal presented the proof for his theory that the upper portion of this ring, the region of the adenoid tissue of the vault of the pharynx, very often formed the portal for the primary infection in tuberculosis, and he believed that what held good for tuberculosis was equally applicable to other infectious diseases. Of late his attention had been directed to another part, the region of the lingual tonsil, and he had been astonished to find so many enlarged lingual tonsils in tuberculous patients in his service at the Montefiore Home and the Bedford Sanatorium for Consumptives. He was convinced that such hypertrophy must have some bearing upon tuberculosis, but whether it was the cough which caused this glandular tissue to enlarge, or whether it was the manifestation of a primary infection or of a secondary one extending from the faucial or pharyngeal tonsil, it was at present impossible to say.

In speaking of the improvement which had of late years taken place in the treatment of tuberculosis of the upper air tract, he said it was not too much to assert that, with proper care and attention to detail, the great majority of the patients could be relieved of their dysphagia and the irritating cough which had its origin in some part of this tract. Besides drugs, the actinic and the Röntgen rays, the high frequency current, and the rays emanating from radium had all proved of some benefit in a limited number of cases. While it was true that the results as to relief of very distressing symptoms were extremely satisfactory, it could not be denied that definite cures of laryngeal tuberculosis were not so readily obtained. Such a result depended in part upon the vitality, the constitution, and the power of resistance of the patient, to alter which the whole metabolism must be changed. This was being tried by several observers abroad and here by means of injections of the old tuberculin of Koch, and, personally, he felt encouraged to continue these injections. Nothing, he thought, was more pernicious in tuberculosis than the now prevalent discarding of all medication and giving the patients only fresh air and a diet. It to a great extent demoralized the patient and it robbed the physician of the scientific stimulus for new ideas and new remedies.

Marked progress had been made in relieving deformities of the face by the injection of paraffin. Unfortunately, however, this procedure was not without danger, chiefly affecting the eye. Several cases had been reported in which total blindness of one eye had resulted; this form of amaurosis was caused, it appeared, by particles of the paraffin getting into the *arteria centralis retinae* and acting as an embolus. In order to avoid accidents, the following rules, outlined by Uhthoff and others, should be followed: 1. Do not inject too much paraffin. 2. Make the intervals between the injections long enough. 3. During injection cut off as completely as possible the circulation in the surrounding blood-vessels. 4. The melting point of the paraffin should not be too low. 5. Avoid injections in a centripetal direction of larger venous vessels. In speaking of radium, he said its rays shared with others the power of relieving certain pains and they had, like the others, brought to a cure cases of carcinoma of the skin of the face, of lupus, and of rodent ulcer. But, in addition, they seemed to have some beneficial effect on internal malignant tumors, as of the oesophagus, etc., in other words, on growths situated in cavities which could be entered very easily by the emanations. It would be a great loss, he thought, if these investigations should be dropped in consequence of the reaction following the foolish enthusiasm of some writers a few years ago. For dry and atrophic catarrh of the nose, Spies, of Frankfort, had used a new suction method with good results. For the endoscopic examination of the maxillary sinus, Hirschmann, of Berlin, had devised several novel instruments. This method might prove as important as cystoscopy. The submucous resection of depleted septa and spurs, especially after the method of Bellenger, was one of the recent advances in nasal surgery. For the control of nasal hemorrhage Mulford, of Buffalo, had successfully employed the hypodermatic injection of adrenal extract into the upper lip. In two instances Dr. Freudenthal had succeeded in promptly checking severe pulmonary hemorrhage by the injection of adrenalin into the arm, and he thought it possible that in nasal hemorrhages the same results could be obtained if we avoided the painful injection into the lip and chose another less sensitive point. In closing, he re-

ferred to Dr. Dawbarn's method of decreasing the loss of blood in operations upon any part of the body by applying Esmarch's constriction to the upper part of the thigh or the arm, thus cutting off the chief blood supply. It was his conviction that in non-malignant tumors of the superior maxilla the greatest danger, *viz.*, from loss of blood, might in this way be avoided, and he thought that the method would prove equally satisfactory in accessory sinus work and in certain amygdalotomies in persons over twenty or thirty years of age.

HYPERTROPHY OF THE PHARYNGEAL AND FAUCIAL TONSILS.

DR. FRANK C. RAYNOR read a paper on this subject. The first part of it was devoted to Lymphoid Hycitrophy at the Pharyngeal Vault, or "Adenoids." Adenoids, he said, were not, strictly speaking, new growths, being only an over-growth of the normal histological elements of the mucous membrane. After describing the symptoms of the condition and referring to the reflexes occasioned thereby (such as asthma, spasmodic croup, chorea, epilepsy, neuralgias, and nocturnal enuresis), he stated that many obscure fevers occurring in children might be attributed to an acute infection of this tissue, and that a large proportion of the inflammatory affections of the middle ear owed their origin to the same cause. Also, these lymph masses in the direct current of the inspired air formed a favorable place for the lodgment and propagation of all sorts of germs, and consequently rendered the possessor more susceptible to all the infectious diseases of childhood. The diagnosis could usually be made from the symptoms alone, and might be confirmed by examination of the nasopharynx with the rhinoscopic mirror, or, in doubtful cases, by a digital exploration of that cavity. When the faucial tonsils were hypertrophied in children, adenoids could be safely assumed in nine cases out of ten. In the treatment of adenoids but little could be accomplished medicinally when the disease was at all advanced. In mild cases, particularly in very young children, he had sometimes obtained relief by the instillation, with the ordinary medicine dropper, of liquid petrolatum, containing two grains of menthol and ten minims of eucalyptol to the ounce. Speaking generally, the use of the sedative

and astringent applications commonly employed in treating catarrhal conditions in this locality, while sometimes relieving symptoms, was rather to be discouraged than commended, as it simply delayed the application of the only effective remedy, removal by surgical means. Curetting was the method which he had found most satisfactory, and with Gottstein's curette and a curette especially designed for the posterior wall, he believed he could clean out a nasopharynx more quickly than in any other way. He almost always employed general anaesthesia with ether, but in exceptional instances had found it possible to remove the growths at his office with or without local anaesthesia. When adenoids and hypertrophied tonsils were both present, he usually attacked both at the same operation, removing the tonsils first. While tuberculous infection was rare in the pharyngeal tonsil, it was exceedingly common in the faucial tonsil. In hypertrophy of the latter, when the enlargement was upward and backward into the soft palate (the so-called submerged tonsil), the condition might be mistaken for adenoids. A correct diagnosis could be made, however, by causing the patient to gag, when the forward bulging of the palate would be observed. The result of the operation for adenoids was usually highly satisfactory, and the improvement which took place in some children when they were freed from this disability bordered on the marvellous.

In speaking of the removal of the tonsils he strongly opposed the very prevalent idea that this was a trivial operation. The usual result of the use of the amygdalotome in the doctor's office was to slice off a piece of the offending organ, leaving behind an infected stump, with its liability to systemic involvement and local inflammation in no degree lessened and with the normal function of the palate still impaired. The only rational method of dealing with this condition was the total extirpation of the diseased mass under general anaesthesia. Becoming dissatisfied with the results obtained from the use of the guillotine, some years ago he began dissecting out the tonsils, gradually modifying his technique to the operation described in 1903 by his colleague, Dr. W. N. Steers. During the past five years Dr. Steers and he had operated in this way, with the most gratifying results, on more than a thousand persons, both

children and adults. Occasionally, after recurring attacks of periamygdalitis, or with very friable tonsils, it was necessary to remove the mass piecemeal.

DR. HUBERT ARROWSMITH read a paper on
THE ACCESSORY SINUSES.

Up to very recent years, he said, there had been a decided lack of definite knowledge concerning diseased conditions of the accessory sinuses of the nose, their pathology, their clinical importance, and the possibilities of treatment. Previous to 1890 only the most meagre attention was devoted to them in even the best works on diseases of the throat and nose. Since that time, however, the flood of sinus literature had welled up in ever-increasing volume, until it was now enormous. With a clearer conception of the pathology of nasal disease, the much-abused term "catarrh" has become more and more circumscribed in its application, and many symptoms formerly classed together, under that appellation, are now known to be due to disease of one or more of the accessory nasal sinuses. These cavities may become acutely or chronically diseased, and by far the majority of acute attacks probably recover spontaneously and without sequelæ. The minority of instances, however, in which this happy result does not occur is sufficiently large to make up a considerable proportion of the nose and throat specialist's work. In acute coryza a process takes place in the lining membrane of the various sinuses identical with that observed in the nasal mucous membrane itself, and in consequence of the naturally small openings of these cavities the mechanical conditions are such as to readily account for the extremely disagreeable sensations which the sufferer from coryza experiences. If for any reason such process is prolonged, or if the condition be originally caused by infection with some of the more virulent pathogenic organisms, there is apt to result an acute inflammation of the sinus or sinuses involved, with marked increase of all the symptoms, amounting at times to an illness of serious menace. One attack seems to predispose to future repetitions, and finally permanent anatomical changes take place, resulting in a fully developed sinus disease. Again, there

may be some anomaly or irregularity about the individual sinuses, or some pathological condition of the nasal chambers in these regions, which prevents ordinary and proper drainage, and under such circumstances the process is likely to be chronic in character from the outset. In the case of the maxillary antrum another factor is present, that of the potential influence of diseased teeth; though this seems to be of much less weight than was at one time thought. Constitutional dyseria probably also predispose to sinus disease.

Most cases of sinus disease are unquestionably due to direct infection, and sinus inflammations and suppurations have been observed as concomitants or complications in practically all the exanthemata and acute infectious diseases. Since 1889 influenza has given a great impetus to the study of sinus disease, in consequence of the wealth of clinical material it has furnished. Various intoxications, notably lead poisoning, are met with. Non-specific pus-producing organisms also play an important part, and it is probable that practically every bacterium of which we have knowledge has been identified in the secretions of diseased sinuses.

The symptoms caused by disease of the accessory sinuses may be so slight as to pass almost unnoticed even by the patient himself, or, on the other hand, so severe as to cause intense suffering and a fatal termination. The symptoms of an acute attack are sometimes definite enough to make a diagnosis possible on the subjective evidence of the patient alone. Pain in some degree, and often intense and agonizing, is always present, and tenderness, which may be extreme, can be elicited over the sinuses which are palpable. In the pronounced cases there is usually a sharp febrile reaction. Often, after a few hours, the distention of the involved cavity becomes so great that the secretion is forced out, or the intra-nasal swelling will diminish sufficiently for the sinus to evacuate itself; when for a time the symptoms will subside, to recur as the obstruction returns. Again, in some instances, unless energetic treatment is resorted to early, neighboring structures may become involved, with serious results, notably in the case of extension to the cranial cavity. The symptoms of chronic sinus disease are usually much less pronounced. Sometimes the patient will merely

seek relief from what he calls "a catarrh." Obstinate headaches, without other assignable cause, intractable neuralgias about the head and face, persistent lesions of the pharynx and larynx, bronchorrhœa and asthmatic attacks, ear symptoms, and digestive disturbances are common results. Impairment and perversions of the sense of smell are constant. If the discharge is fetid, the odor is likely to be more appreciated by the patient than by his friends; which is not the case in other offensive nasal diseases. Mental habitude is frequent, and aprosexia occasionally results to as marked a degree as in children the subjects of lymphoid hypertrophy. In extreme cases destruction of the bony walls of the cavities may supervene, so that we encounter orbital abscesses, meningitis and cerebral abscesses from direct infection or as the result of an osteomyclitis. It is probable that a large proportion of the cases of optic nerve atrophy originate in diseased conditions of the accessory sinuses. The one symptom which is common to all chronic disease of these sinuses is a discharge of pus from the nostril, and this may constitute the patient's sole complaint.

For clinical purposes a distinction is made between the anterior and posterior group of cavities. The anterior comprises the antrum, frontal sinus, and anterior ethmoidal cells, while the sphenoidal sinus and posterior ethmoidal cells form the posterior group. Irrigation of the antrum and sphenoidal sinuses is usually, and of the frontal sinus not infrequently, practicable, and the presence or absence of pus in the returning fluid is definite evidence of the location of the trouble. If the irrigation of the other sinuses is negative, the ethmoidal cells can thus be held responsible by exclusion. These procedures are greatly facilitated by removal of a part or whole of the middle turbinated bone. Transillumination possesses a negative value in the diagnosis of antral and frontal disease, but is otherwise often very misleading. Puncture of the naso-antral wall in the middle or lower meatus, with irrigation, will settle one way or the other the question of involvement of this cavity.

The procedures, palliative and radical, which have been proposed in the treatment are exceedingly numerous. The provision for suitable drainage through the natural opening is always the first thing to be secured, and often an

apparently severe sinus suppuration will subside under mild topical treatment when this has been accomplished. Therefore, for therapeutic, as well as diagnostic, purposes removal of the middle turbinate is a most valuable measure. Surgery, if necessary, should be sufficiently radical to secure the desired ends, but it has always seemed to Dr. Arrowsmith that much needless and unjustifiable mutilation has at times been practised on the subjects of sinus disease. Having referred to various operations on the maxillary antrum, he said that in his experience very few of the cases of frontal empyema demand radical surgery for their relief. Very often they will recover when drainage has been secured by the removal of intra-nasal obstruction, with appropriate irrigations. A certain number of patients are met with, however, in whom external operation is necessary, and here we have a wide range of choice. He mentioned a number of the procedures employed, and went on to say that in sphenoidal trouble Hajek's method of breaking the anterior wall and enlarging the opening had proved satisfactory in results and not difficult of accomplishment.

Dr. HENRY L. SWAIN, of New Haven, Conn., read a paper on

INDICATIONS AND TREATMENT IN ACUTE DISEASE OF THE
ACCESSORY SINUSES.

He said that if infected material was not allowed to remain long in the nose, infection of the accessory sinuses would not take place. The first indication for prophylaxis and also for treatment was, therefore, not to neglect muco-purulent catarrh. When frontal sinus involvement had occurred, the diagnosis could readily be made with the aid of a transilluminator if only one side was affected. Without the transilluminator, by spraying out the nose with cocaine and suprarenal solutions to make it as open as possible, then cleansing it first by blowing, and then wiping out the middle meatus of the nose, one could frequently readily detect a stream of pus flowing down from the anterior part of the meatus toward the back of the nose, indicating that the material came from the frontal region. Usually, also, the anterior end of the middle turbinate bone was swollen and club-shaped, and in later cases there was almost always

granulation tissue in this position. Introducing a probe into the lower part of the infundibulum, and gently producing a little backward and forward motion, would frequently result in pumping down the fluid so directly from the frontal sinus that an absolute diagnosis was immediately established. It was not the cases where the symptoms were severe that were really the most dangerous, and it was not at that stage when the swelling was most pronounced that infection of the other sinuses most frequently took place. This was most apt to occur when the trouble was more or less in subsidence, where there had not been proper drainage, and where there was day after day a slight, dribbling discharge from this cavity. The diagnosis of frontal sinusitis once having been established, the physician in charge of the case should see to it that as long as pain and tenderness existed the patient was daily seen and if necessary daily probed. The use of cocaine and suprarenal solutions rendered the probing of the frontal sinus often perfectly easy and usually painless. When repeated efforts, carefully carried out by competent hands, failed to make it possible to probe the sinus, it was perfectly proper to remove a limited section from the anterior end of the middle turbinate. Spraying or douching with saline and adrenalin solutions was of great service, and the secretions could be softened and kept fluid by the insufflation of boric acid after each cleansing. Having referred to the symptoms and diagnosis of disease of the other sinuses, he said that the indications were the same for all these cavities, viz., probing and curetting sufficiently to produce a free and unobstructed opening for the establishment of perfect drainage, and the maintenance of this until a cure resulted. As in frontal sinusitis, the cleansing of the nose on the part of the patient should be done in all cases. In all, the insufflation of boric acid seemed to be of great value. In acute and subacute cases of involvement of the antrum of Highmore a positive cure was often obtained by the simple procedure of puncture, as with Myles's trocar, through the anterior meatus of the nose. The opening was then maintained, and subsequent washings of the cavity could be performed with comparative ease. Dr. Swain felt positive that if this procedure was more generally adopted but few cases

of chronic empyema would occur. The latter condition apparently more often followed the acute infection in the ethmoid cells, and possibly in the sphenoid, than in the frontal sinus, and perhaps the antrum, because it was with the utmost difficulty that adequate drainage here could be continuously secured for any very long period. Any or all of these cavities might become so acutely attacked or, what was more common, suffer from so acute an exacerbation of a chronic trouble, that simple measures were not to be considered. So threatening and urgent did the symptoms become, involving the probability, if not the actual presence, of meningitis, septicæmia, or pyæmnia, that one was compelled to resort to an external operation of one kind or another, not only to give the patient relief from his pain, but to remove, if possible, the actual danger to life. The conclusion of the paper was devoted to a brief consideration of such radical procedures.

THE SERUM TREATMENT OF HAY FEVER.

Dr. SATTERTHWAITE said that Dr. Charles H. Knight, who was to have read a paper upon the serum treatment of hay fever*, would be unable to be present on account of illness. In order that this phase of the subject might not be left out of the discussion, Dr. Satterthwaite said that he would like to give his personal experience with Dunbar's serum. For a number of years he had been a sufferer from hay fever, the attack usually beginning on the second of July. Last summer he was persuaded to give Dunbar's pollantin a trial, and he did so, introducing it both into the nostril and the eyes, and his attack of hay fever, instead of lasting twenty-eight days, as it had hitherto done, was over in twelve days. He attributed the curtailment of the attack either to the pollantin or to the fact that he had spent a good deal of his time in July in playing golf.

DISCUSSION.

Dr. JOSEPH W. GLEITSMANN said that while his personal experience with the serum treatment of hay fever was limited, he had come to the conclusion, from his reading

*This paper was published in *The Medical Record* of March 10, 1906.

and observation, that the same serum would not answer in all cases, and that we needed a different serum here from that employed abroad. The speaker said that the association of tonsillitis and rheumatism was now recognized by all. Especially was this the case in the type of tonsillitis in which the follicles and lacunæ were invaded, and here local remedies alone were not sufficient. Dr. Gleitsmann said he was glad to hear Dr. Freudenthal speak of primary tubercular infection of the lingual tonsils. Personally, he had observed a few such cases, and he had in mind one particular case in which the primary infection of the tonsil could be demonstrated beyond the shadow of a doubt. The patient was a woman in whom the disease began in the lingual tonsil and extended to the pharynx. The disease was very extensive, and drastic measures were adopted to eradicate it. The patient was entirely cured, and fourteen years had now elapsed, without any signs of a recurrence. She had never had any symptoms of pulmonary tuberculosis. He was also glad to hear Dr. Freudenthal defend the use of tuberculin. He himself had found it of service, and in selected cases of tuberculosis he was still in favor, as he had been for a number of years, of injections of a good preparation of tuberculin, either the older preparation of Koch, or, preferably, the preparation of Dr. Carl von Ruck, of Asheville, N. C. The speaker agreed with Dr. Raynor that the thorough removal of adenoids necessitated the use of an anæsthetic, and he believed that the operation could best be done in the upright position. He had not found it so easy to probe the frontal sinus as Dr. Swain would have us believe.

Dr. BRYAN DE FOREST SHEEDY said he had found it quite impossible, in the majority of cases, to probe the frontal sinus, and he was not in agreement with what had been said in regard to the treatment of frontal sinusitis by the open, external operation. The matter of packing the sinus externally and maintaining an opening there was more serious than it was usually regarded to be, and the marked deformity it might give rise to should not be overlooked. In regard to the examination by transillumination, the speaker said he had found the method unsatisfactory and wholly unreliable, as we were apt to be misled by the vary-

ing thickness of the normal bone and tissues in different individuals. Personally, he had given up the use of the light altogether, excepting as an aid to other means of diagnosis. In adrenal and cocaine solutions we possessed two valuable remedies for the reduction of swelling of the nasal tissues, and in the early stages of frontal sinus disease they would often give the patient wonderful relief. The results of treatment obtained by this conservative method were now much better than they had been heretofore, and the number of cases that progressed into the chronic stage would doubtless be largely decreased thereby. Dr. Sheedy said he did not regard the existence of even advanced pulmonary tuberculosis as an indication for the induction of premature labor, as had been advised by some. He considered the removal of adenoids without an anæsthetic as cruel, even in young children, and favored the practice in vogue in the London City Hospital, where it was obligatory upon the surgeon to give an anæsthetic in those cases, although there they preferred chloroform to ether. A small amount of ether would spare the child much pain, and render the operator's work easier and more thorough.

DR. H. BEAMAN DOUGLASS said he agreed with Dr. Sheedy in regard to the unreliability of transillumination in the recognition of frontal sinus disease; in his clinic they had discarded the method entirely. In regard to probing the frontal sinus, he would not claim that the probe had entered the sinus until its presence there could be verified by the X-ray. While the introduction of cocaine had proved a great advance in the recognition and treatment of diseases of the upper air passages, it had also revealed other problems that were still unsolved. He then spoke of the value in chronic nasal catarrh, and as an adjuvant in adenoids of the internal use of sanguinaria, phytolacca, and pinus canadensis.

Dr. LEWIS A. COFFIN said that in the removal of adenoids or tonsils he did not think it mattered much what instrument the operator preferred, or what the position of the patient might be; the chief point was to remove the offending growths, and remove them thoroughly. In the removal of adenoids he usually preferred to do the operation under chloroform anæsthesia. While transillumination could not

be solely relied upon in the diagnosis of frontal sinus disease, it was a valuable accessory in the recognition of that condition. Dr. Coffin said he had failed many times to introduce a probe into the frontal sinus, and in those cases where he succeeded he always liked to verify its presence there by taking a radiograph with the probe in position.

DR. LEE M. HURD agreed with Dr. Freudenthal that the paraffin injections were not nearly so harmless as was at first supposed. The submucous method he thought had been a great advance. As to sinus affections, he believed that simple treatment, as by means of hot saline injections, in acute cases would in the great majority of instances prevent the development of chronic disease, with its serious consequences.

DR. ROBERT C. MYLES spoke of the favorable conditions for the invasion of sepsis presented by the cervical lymphatics, and said that next to the colon, which was the most susceptible portion of the economy, came the tonsils in their susceptibility to septic infection. He was uncertain as to what was actually the best method of removing the tonsils, and in different cases he was in the habit of using different methods. The so-called adhesions after removal were simply a portion of the normal tissue that was left, as he believed it was an impossibility to clear away all the tissue from between the pillars. As to probing the frontal sinuses, he thought this could usually be practiced without difficulty in diseased conditions, and the more diseased the parts were the easier it was. It was a very difficult matter to probe the normal frontal sinus, and, fortunately, this was not necessary. In sinus involvement he was accustomed to use hollow probes, so that irrigation might be practiced by means of them.

The discussion was closed by DR. FREUDENTHAL and SWAIN. Dr. Freudenthal said that in his experience pregnant women suffering from laryngeal and pulmonary tuberculosis always died, and therefore he would in all such cases urge the induction of premature labor as early as possible. Dr. Swain wished it to be understood that he did not by any means depend upon transillumination as the sole means of making a diagnosis in frontal sinusitis.

Stated Meeting, February 12, 1906.

SYMPORIUM ON PUBLIC WATER SUPPLIES AND
SEWAGE.

CASSIUS E. GILLETTE, Major of Engineers, U. S. Army,
presented a paper on

FILTRATION OF PUBLIC WATER SUPPLIES.

Often large sums were spent, he said, to get a water supply from mountainous or sparsely settled regions, but immunity from typhoid was not thereby obtained. Maps accompanying the report of the census of 1890 indicated rather more typhoid in the country along clear streams in the Appalachian region than along the muddy streams of the Atlantic Coast plain or of the Mississippi valley. This was probably partly due to the fact that if a clear and pure stream happened to get contaminated, the germs lived much longer than they did in muddy waters teeming with other bacteria. One typhoid case anywhere within the watershed might pollute the entire supply. It would, therefore, appear that no source which was subject to inflow of surface water was safe unless measures were taken to remove the dangerous bacteria before the water was used. Three methods of making such removal existed in nature: 1. Quiescence for a long time, to permit the germs to die or settle to the bottom. 2. Flow for long distances in streams bearing sand or silt. 3. The process of soaking into the ground, with a reappearance as springs or artesian wells.

Artificial means of purifying large surface water supplies had generally been made in imitation of the first and third of these natural processes. Large reservoirs allowed both the mud and the bacteria to settle, but they were open to the objections that under certain conditions they developed growths which were disagreeable, if not injurious; that the accumulations in the bottom became very foul, and that their construction of a sufficient size was expensive and often impracticable. The system of slow sand filtration was undoubtedly the most practical and reliable method yet devised for general use with large water supplies. With cer-

tain muddy waters, however, the expense of operation became very great. Under such conditions many cities had adopted a system of mechanical filtration in which the mud was first coagulated by alum, or some equivalent, and then strained out with the bacteria by forcing the water rapidly through a coarse sand strainer, which was cleansed at intervals by mechanical means. Slow sand filtration consisted in causing the water to sink slowly through a bed of clean sand from one to three feet thick. Although originally devised as a simple natural strainer, it had been discovered that the action was more complicated and effective than mere straining. In the operation of a filter the results were generally poor until the sediment and bacteria, settling on the surface of the sand, had partly clogged the interstices and forced a thin gelatinous layer over the particles of sand forming the surface of the filter. This *Schmutzdecke* (as the Germans called it) undoubtedly constituted the most essential part of the system.

As the quickness with which the *Schmutzdecke* was formed, as well as its efficiency, must depend somewhat upon the amount of bacteria contained in the water, it would seem unnecessary or even inadvisable for a city to go to the enormous expense of bringing in a mountain supply to be filtered, if a reasonably good supply could be obtained at a nearer point. The bacteria in the nearer supply, while they would injure it for direct use, would be harmless or even advantageous in a supply to be filtered. This principle, however, should be applied with some limitations. It was not advisable for a city to filter water which was positively dangerous, as, for instance, to use a supply contaminated by its own sewage; but an ordinary river water, taken from a point not immediately below a large city, was generally sufficiently good for filtration, while it might be much more economical than a mountain supply, both from the smaller first cost and from the better adaptation for filtering purposes. Thus, in the author's judgment, it required other reasons than mere improvement in quality for the city of New York to go to the distant mountains for water to be filtered if a naturally good supply could be obtained at less cost from the Hudson at the point where the proposed conduit crossed that stream.

Major Gillette said he had endeavored to deduce, from the records in the Filtration Bureau at Philadelphia, what constituted the best preliminary treatment of Schuylkill River water at that point, and to determine by the records of the slow sand filters what conditions of the applied water had given the greatest runs and at the same time good results. Having given the results of a number of observations, he concluded as follows: The various elements of the problem for the Schuylkill water have been tabulated and plotted on a large variety of assumptions; but thus far about all that can be said is that in general the removal of the mud improves the water for filtration, partly by lessening the sediment, partly by removing excess of bacteria, and perhaps partly by the incidental improvement of the water in some other respect not yet determined. The indications also are that the most economical preparatory treatment of this water is for part of the year by sedimentation, part of the year by both sedimentation and preliminary filtration, and occasionally by the direct use of the raw water. It will be seen that where preliminary treatment is necessary, as it generally is, the subject of filtration becomes much more complex, especially as to the economics of engineering design. In the present state of knowledge experiment alone will show the best system for any particular case. As such experiments take time, it would be the part of wisdom for every municipality drawing its supply from streams or lakes to inaugurate small testing plants to determine the best way of purifying its water supply, even if such purification on a large scale is not contemplated in the immediate future.

PUBLIC WATER FILTRATION IN MASSACHUSETTS.

The next paper was by DR. CHARLES HARRINGTON, Secretary of the Massachusetts State Board of Health. He said that within the Commonwealth there were but five communities which filtered their water, and but one of these was a place of any considerable size. The public water supplies of the State were, in general, very effectively guarded against pollution at their sources, and hence, with few exceptions, were not in need of purification before distribution. Of the five supplies which were filtered, but one, that of Lawrence, was so treated because of danger in the use

of untreated water. Having briefly described the methods employed in these five instances, he said the results of the change in the character of the water on the health of the city of Lawrence had been most striking. Prior to the installation and use of the filter, the typhoid death-rates per 10,000 population had been as follows: 1890, 13.44; 1891, 11.94; 1892, 10.52. The filter was completed in September, 1893, and was immediately placed in service. The rate for that year was 7.96, and by 1904 it had fallen to 1.61.

ON THE PROBLEMS OF THE PUBLIC WATER SUPPLY OF NEW YORK CITY.

ERNST J. LEDERLE, Ph. D., a member of the State Water Supply Commission, discussed this phase of the subject. He stated that, together with the question of adequate transportation facilities and the proper housing of its school children, the furnishing of a proper water supply was one of the three matters of most vital importance to the residents of this city. For the past five or six years competent authorities on the subject had stated that within a very short time the water supply of the city of New York would be insufficient for its wants, and for the increase in population and the increase in the use of water. Various commissions had been appointed during the past five years to investigate this subject, and as the result of their labors a number of very excellent and exhaustive reports thereon had been submitted, and in all of these the importance and urgency of an additional water supply were emphasized. As a result of this agitation, two bills bearing upon the subject were passed by the Legislature in 1905. One of them, known as the McClellan Bill, authorized the Mayor of the city of New York to appoint a Board of Water Supply, the duty of which should be to proceed immediately and with all reasonable speed to ascertain what sources existed and were most available, desirable and best for an additional supply of pure and wholesome water for the city of New York. This Board was thereupon appointed, and based upon its labors and investigations, and aided by the reports submitted by previous commissions, a report was compiled and submitted to the Board of Estimate and Apportionment of the city of New York on October 9, 1905, in which the need of an additional water supply was again

emphasized, and a certain section of the State recommended in which to obtain that additional supply. The plan submitted by this Board entailed the enormous expenditure of over \$160,000,000, and a great deal of public opposition to it had developed, including many formal protests which would eventually be taken up by the State Board of Water Commissioners. This Board would have to decide, first, whether the improvement asked for was a public necessity; second, whether the plans, as outlined, were just and equitable to those affected by it, and whether it affected the present or future water supply of the section recommended; third, whether the city of New York had made proper provision for the payment of direct and indirect damages to the property holders.

The sources for an additional water supply recommended by the Board in its report of October 9, 1905, were the following: 1. Esopus Creek, to be taken at a point near Olive Bridge. 2. Rondout Creek, to be taken at a point near Napanoch, together with three small streams tributary to the Rondout. 3. Schoharie Creek, to be taken at a point near Prattsville. 4. Catskill Creek, to be taken at a point about one mile north of East Durham, together with several tributary streams. The estimated yield of these proposed sources would aggregate 660,000,000 gallons daily. To render this supply available the construction of a number of reservoirs and of a new aqueduct would be necessary, and the proposed system also included a large filtering plant near White Plains. The conclusions offered by the Board were as follows: 1. The Catskill Mountain watersheds were the most available, the best and the cheapest from which to obtain a proper additional supply of water for the city of New York. 2. The order of development of these sources should be Esopus, Rondout, Schoharie and Catskill. 3. The Borough of Brooklyn should look for immediate relief from the water famine conditions existing to the water collected and stored in the sands of Long Island, and should use every effort to make these sources available. 4. To insure an addition at the earliest possible time of some 80 to 150 million gallons per day to the safe available Croton supply, work should be concentrated on the location and construction of the aqueduct from the Croton watershed to

Ashokan Reservoir, and the construction of the latter. The aqueduct would cross the Hudson at New Hamburg.

In connection with his remarks, Dr. Lederle showed a number of interesting lantern slides of views of the present Croton watershed, illustrating the improvements that had been made there in recent years from a sanitary standpoint. He also presented a map showing the proposed Catskill Mountain water supply, with its reservoirs and aqueduct.

In reply to the claim made by some that the Hudson River, at a point above the influence of salt water, offered the most available source for an additional water supply, Dr. Lederle said that one objection to the plan was that the water would have to be pumped, and another was that if 800,000,000 gallons of water were taken from the Hudson River daily, there would come a time in dry seasons when salt water might be backed up to the point of supply, and when shipping might also be interfered with. To offset these conditions it would be necessary to build a large compensatory reservoir.

SEWAGE IN ITS RELATION TO HEALTH.

DR. HERBERT E. SMITH, Dean of the Faculty of Medicine, Yale University, read this paper. The injurious effect of sewage, as generally known, was so well recognized, he said, that he would ask permission to range somewhat beyond the prescribed limits, and to assign to the term sewage a somewhat wider significance than usual, defining it as the wastes from man's life, both personal and commercial. When the human apparatus was impaired in action or overtaxed by the excess of waste material to be disposed of, we saw manifestations which in one case we called uræmia, and by other names in other cases, but might recognize in all cases as the troubles of a community poisoned by its own metabolic wastes. The noxious materials were mostly discharged into the environs. Man had devised secret hiding places for the liquid and solid discharges, but the volatile and gaseous parts passed into the atmosphere. Was it not possible that medical opinion had swung too far in the application of the new found knowledge concerning the rôle played by bacteria as causative agents of disease when it so

largely denied the deleterious effect of sewage accumulations other than those due to germs? In other words, was there not a "stink nuisance" which was a real and sanitary evil? The question was a frequent one in our courts of law, and in general it was uncertainly answered by medical witnesses. The only adequate explanation of the advantages derived from the fresh air treatment now so much in vogue was that such treatment was based on our desire to eliminate the deleterious action on the patient of the really small amount of excrementitious matter found in the air of a modern dwelling.

DR. SMITH said his object was merely to enter a plea for clean living, based on a more general and fuller recognition of the detrimental influence of man's dejecta, even when not specifically infected, and also of the products of their decomposition. While he would urge this side of the question, he would not neglect the more easily demonstrated dangers due to infected sewage. A discussion of the sewage dangers to the public health from such diseases as typhoid fever and cholera was largely a discussion of the means by which the infectious organism might be transmitted from sewage to the food of man. Air transmission was regarded properly as of less importance than formerly. Germane to air transmission was that *through* the air by means of flies, an agency the general recognition of which was recent. He would venture to predict that when this method of transmission had received more careful consideration, the fly would rival the historic well as a means of disseminating typhoid.

The great epidemics of typhoid and cholera, as was well known, had been due to water transmission of infectious organisms. The danger from infection through the medium of ice formed from contaminated waters seemed, however, to have been overestimated. The modifying conditions were so potent that, although it was frequently cut from sources which would not be tolerated as sources of drinking water, there were hardly any authentic cases of infection through the use of ice. The greatest source of danger from ice appeared to be in connection with milk, and it was possible that organisms enfeebled by long contact with ice might regain their virulence on being introduced into that fluid.

Transmission by the agency of milk was connected closely with contaminated water through easily understood relations. There were some cases where milk infection had been traced to the agency of flies, and it was likely that this was not uncommon. Of other means of transmission, green vegetables were a possibility, and this should be considered where it was proposed to use sewage for irrigation and the fertilization of truck farms. The remaining means most in the public mind was that through the agency of shell fish. This was a real danger, as indicated by a number of demonstrated epidemics and by numerous probable isolated cases, as well as the known conditions of oyster culture. Summing up, Dr. Smith said there were dangers to health from too close an association with our waste products after elimination from the body as well as before, which demanded constant attention to the purity of the air we breathed and the cleanliness of our surroundings. There were also well recognized changes through the transmission of infectious materials from sewage, and these demanded not only the removal of sewage from our immediate environments, but its ultimate purification.

ULTIMATE DISPOSAL OF SEWAGE.

GEORGE A. SOPER, Ph. D., a member of the New York Bay Pollution Commission, said that the problem of the disposal of sewage was one that had arisen as a result of the concentration of population. In the beginning there was very little difficulty, apparently, for man to dispose of his waste in a manner that would meet with the most exacting demands of the modern hygienist. He simply disposed of his waste wherever it happened to be most convenient to him, and then moved away. That could not be done in the cities and towns; there it was necessary to move the waste away, and it gradually had become necessary to move it further and further away in order to guard against, first, the stink nuisance, and, second, the production of disease. Originally, sewers were not built to carry off what we now call sewage, but were designed as underground drains for the purpose of carrying off rain water chiefly. Both in London and Paris they were built for that purpose, and as late as 1815 it was made a penal offense in London to use

the underground drains for any other purpose than to carry away the storm water and slops, and it was not until 1845 that cess-pools and privies were abolished and the underground drains were utilized for the purpose of disposing of the sewage.

The statute books of many of the States of this country contained laws pertaining to the disposal of sewage. In some this control of the sewage was only partial; in others it was more or less stringent, while in comparatively few the restrictions were very severe. Among the latter were New York, Massachusetts, Connecticut, Vermont, New Hampshire and Wisconsin. In New York State, all projects relating to the disposal of sewage had to be submitted to the State Commissioner of Health for his approval, and the emptying of unpurified sewage into any of the waterways of the State was prohibited. The laws themselves were thoroughly efficient, but the difficulty lay in their proper enforcement.

Dr. Soper said that the employment of sewage purification processes was a comparatively new development in sanitation. In this country, twenty-three of the States had plants for that purpose a year or so ago. Of the total urban population, about 28,000,000, 73% emptied their sewage into inland waterways, and 23% emptied theirs into the ocean, leaving about 4% which purified their sewage. The total amount of solid matter in sewage, roughly considered, should range from 150 to 400 grammes per person per day. About one-half of this was organic matter, and about one-third was suspended in the form of solids in the water. These figures were mere approximations, but they served very well to give some general idea.

The chief method of disposing of the sewage at the present time was by dilution. It was emptied into the nearest waterway, and if the supply of water was sufficient, it naturally purified the sewage in time. The question arose, How much sewage could be emptied into a water-course without overcharging it? It had been found that for such rivers as we had in New England, a dilution of one part in twenty-three was usually sufficient to avoid the production of odors. The dilution in salt water, however, was not so favorable, as salt water would not digest (bacteriologically) as much

sewage as fresh water. In the ultimate satisfactory disposal of sewage, the fate of the bacteria played the leading part.

Sewage farms were among the oldest methods of disposal, and some of those used for the sewage of Paris dated back thirty-five years. This plan was an extravagant one in that it required a very large amount of land. In some parts of America, and notably in Massachusetts, intermittent sand filtration had proved a good method. Another method was that of contact beds of carefully prepared stone or gravel, through which the sewage was allowed to flow upward. By this a high degree of purification might be secured. Still another was that of percolation or sprinkling. The degree of purification attained in these two processes was such that not less than ninety per cent. of the bacteria and most of the suspended salts were removed. The sprinkling method was three or four times as rapid as that by contact, but in this the sewage required preliminary treatment for the removal of gross matters, such as grit, rags, etc. To accomplish this, sedimentation and what were called septic tanks were employed, and under favorable circumstances one third of the bacteria and other suspended matter was thus removed. One of the most common methods of sewage disposal was by means of chemical precipitation. It was not a final process, but was capable of removing at least sixty to eighty per cent. of bacteria and other suspended matter.

THE COMMERCIAL VALUE OF CLEAN WATER.

GEORGE C. WHIPPLE, C. E., read a paper on this subject. While we had heard much of late about the cost of filtration, he said, we had heard comparatively little about the financial value of filtered water to the consumers or of the added value which filtration gave to a water supply. We had heard estimates given of the value of the persons saved from death by typhoid fever, but never had the subject of the financial value of pure water from the standpoint of the consumer received adequate treatment; never had the worth of clean water, irrespective of its sanitary quality, been carefully studied; never had the householder who had complained of the hardness of the water supplied to him realized that this hardness was an expense as well as an inconvenience. A critical study of available data for a number of American cities had shown that for every death

from typhoid fever the vital assets of the community were reduced in value by at least \$10,000, and that for every unit death-rate per 100,000 chargeable to water-borne typhoid fever it was fair to deduct a depreciation of \$2.75 per million gallons from the value of the public supply. This was equivalent to ten cents per capita annually for each unit death-rate from typhoid fever per 100,000. Thus, in Albany filtration had reduced the annual typhoid death rate from 104 to 26 per 100,000, thereby rendering each person of the community potentially richer by an income of \$7.80 a year. Or, to express it in another way, the filtration of the water supply gave each head of a family of average age a potential life insurance of \$2,300.

From long continued observation of the objections which consumers had raised against the most conspicuous qualities of water supplied to them, it had been found possible to obtain mathematical expressions to show the effect of turbidity, color, and odor on the percentage of objecting consumers, and from these to calculate the depreciation chargeable against a dirty or ill-smelling water as compared with one of standard purity. By way of illustration, it might be stated that the depreciation of value of such a water as the Croton was in summer at least \$11.00 per million gallons, or \$1,500,000 a year for the entire supply. Now, the Croton water could all be filtered for an annual sum less than this; so that even from the standpoint of supplying the city with a water which was clean and sweet, and ignoring all sanitary considerations, the filtration of the Croton water would be a wise investment of the municipal funds. In Flatbush, where the water was hard, the cost of needed soap reduced the value of the water by about \$6.00 per million gallons from what it would be if the hardness was no greater than that of Croton water. Having given the estimated figures relative to an improved water supply in Philadelphia, Watertown, N. Y., and other places, going to show that clean water had a commercial value, the speaker expressed his confident belief that many of us would live to see the day when filtration would be not only demanded by the public, but our health laws would require that every surface water used for domestic supply should be submitted to some form of artificial purification.



Stated Meeting, March 12, 1906.

SYMPOSIUM ON THE PRESENT STATUS OF RADIOLOGY IN DIAGNOSIS AND TREATMENT.

INTRODUCTION ON X-RAY THERAPY.

This paper was by Dr. A. D. ROCKWELL. He said that in estimating the present status of the X-ray in medicine he would take his stand neither among those enthusiasts who consciously or unconsciously were ever overestimating its value, nor among those ultra conservatives who, without practical experience, were quite as ready to go to the other extreme. There were always three classes to be found in the development of any new therapy: 1. Those who were quite honest, but whose training and abilities, or whose credulity and deficiency in a healthy skepticism, rendered them incapable of eliminating sources of error, who believed what was easy and for personal interest to believe, and who could not be trusted either to observe or to report their observations with accuracy. 2. Those who were capable of sifting truth from error, but who were not quite honest; who knew the truth, but whose commercialism rendered them antagonistic to it. 3. Those who were both honest and capable, who were not blinded or misled by a so-called brilliant result or two, but with analytical accuracy were able to determine the place and true value of their own experience. He was entirely in accord with the following conclusions of an observer belonging to this last class who had classified and treated 167 cases of malignant disease: That while the X-ray exerted a powerful influence upon cancer cells of all varieties, yet it was curative only in the more superficial forms of malignant disease, and should not be used in the graver and deep seated forms except in "inoperable" cases or as a prophylactic after an operation, as a possible though not yet proved means of avoiding recurrence (*Coley, Annals of Surgery*, August, 1905). Dr. Rockwell cited seventeen cases of his own which were of statistical value by reason of thoroughness of treatment. The summary of them was as follows: Melanotic sarcoma, 1 case; 32 exposures, no benefit. Epithelioma, 2 cases; 45 and 47 exposures, respectively, recovery in

both. Exophthalmic goitre, 1 case ; 16 exposures, no benefit. Carcinoma of the mouth, 1 case ; 24 exposures, no benefit. Carcinoma of the tongue ; 1 case, 16 exposures, no benefit. Carcinoma of the neck, 2 cases ; 24 and 25 exposures, respectively, no benefit ; on the contrary, both were stimulated to increased activity of growth. Alopecia areata, 1 case ; 22 exposures, no benefit. Lupus vulgaris, 1 case ; 45 exposures, recovery. Lupus erythematosus, 1 case ; 36 exposures, no benefit. Tuberculous glands, 1 case ; decided benefit, but treatment abandoned because of sudden and severe dermatitis. Scirrhous of the breast, 1 case ; 24 post-operative exposures, no evidence of return after three years. Rheumatoid arthritis, 1 case ; 24 exposures, no benefit. Nævus maternus, 1 case ; 36 exposures, with recovery. In conclusion, he said, in estimating a remedy it was important that we know its weakness as well as its strength, and therefore in preparing this paper his object had been, while taking due notice of both successes and failures, to emphasize the failures more than was generally done, on the principle that as much could be learned oftentimes from the last as from the first. Every failure which was published in detail was in one way as much a fact for science as a success, since it reduced and guided the labors of future experimenters. That the failures greatly outnumbered the successes simply indicated that we had in the majority of cases not rightly adapted the means to the end, and emphasized the proposition that, while the X-ray was not only valuable but curative in many superficial diseases, both benign and malignant, it possessed but little if any permanent efficiency in the deeper seated and graver forms of malignant disease.

DR. JOHN H. MUSSER, of Philadelphia, made an address on

THE X-RAY IN MEDICINE.

Having stated that, on the whole, the X-ray had not proved satisfactory in leukaemia, because of secondary results, he expressed the opinion that the reason for this was that it had been employed in old cases. In these, secondary changes had occurred before the X-ray was resorted to, and this had the effect of stimulating such changes. He then cited a case of his own in which there had been an entire

disappearance of leukaemia under X-ray treatment, the leucocyte count being reduced from 6,000 to 4,000. He believed that a cure had been effected, but, at the same time, thought that unless the X-ray were applied from time to time there would probably be a recurrence of the trouble, as was the case in another instance which he had observed.

The speaker next discussed the value of the X-rays as a diagnostic aid in cardio-vascular and gastro-intestinal conditions. While in many obscure cases, especially those of abdominal trouble, the evidence furnished by the rays was simply confirmatory, it was to be expected that with improved technique and enlarged experience this method of diagnosis would prove of much greater value in the future. In speaking of the use of the X-ray in cardio-vascular conditions, he said that the presence of an aneurism in the thoracic cavity had been positively demonstrated by this means over and over again, and in that connection he called attention to its usefulness in detecting multiple aneurisms which ordinary exploration would not reveal. By means of the X-ray and the fluoroscope, the shape, size and position of the heart could readily be demonstrated, and for that purpose the method was particularly valuable in the case of fat people and women. The presence of mediastinal growths and enlarged glands could also be shown by the rays. In dealing with pulmonary conditions, the rays enabled us to distinguish between consolidation and effusion and to localize pulmonary abscesses.

In illustration of the remarks of Dr. Musser, Drs. H. K. Pancoast and W. S. Newcomet, of Philadelphia, showed by transmitted light a large number of radiosscopic pictures. In those relating to the oesophagus, stomach and intestines, Dr. Pancoast explained that the radiographs had been taken immediately after the patients had swallowed an emulsion of bismuth, by which means a very distinct outline of the organs of the gastro-intestinal tract could be obtained by an exposure of proper time and degree.

DR. WILLIAM B. COLEY read a paper on

THE VALUE OF THE X-RAY IN CANCER.

Of the 167 cases of malignant tumor reported in his paper, read before the New York Surgical Society in May,

1905, and published in the *Annals of Surgery* in the following August, 68 were sarcoma, 36 carcinoma of the breast, 44 epithelioma of the head, face, and neck (including the tongue), and 14 deep-seated abdominal tumors, most of them probably carcinoma. In discussing the results of the X-ray treatment in cancer, he said a careful distinction should always be made between superficial epitheliomatous growths and deep-seated tumors. An analysis of the successful cases thus far published would show that the great majority belonged to the first mentioned group, in which only the superficial layers of the skin were involved. It had been said that the X-ray had certain advantages over other methods of treatment, particularly excision, in that it left a smaller scar. His own experience had been that where the deeper layers of the skin were involved the X-ray treatment was very unsatisfactory, being far inferior to excision. Dr. Coley summed up his conclusions as to the value of the X-rays as follows: 1. The X-rays have an undoubted and oftentimes remarkable influence upon cutaneous carcinoma and superficial epithelioma, resulting frequently in the entire disappearance of the lesion and sometimes in a permanent cure. There is, however, a strong tendency to recurrence, and it is still an open question whether it is not better to excise even superficial growths when possible, reserving the use of the X-rays for cases beyond operation. 2. In deep-seated cancer, both carcinoma and sarcoma, the influence of the X-rays is in most cases slight and temporary. The few cases in which there has been an apparent disappearance of the tumor have, in almost every instance, been quickly followed by either local or metastatic recurrence. For this reason the X-rays should never be used in "operable" deep seated cancer. 3. The temporary improvement observed in a certain number of cases, as shown by decrease in size or cessation of growth, together with considerable diminution in pain, justify the use of the X-rays in cases of "inoperable" deep-seated cancer as a palliative measure. 4. The use of the X-rays as a pre-operative measure in "operable" cancer is strongly to be condemned (*a*) because the disease may, and often does, extend locally or, more especially, by metastases, during the period of pre-operative treatment; (*b*) because, aside from such real dangers, there

are not any advantages to be gained by such a course of treatment. If the tumor does not decrease in size, there is certainly nothing gained; if it does decrease in size, and the neighboring glands become smaller, there is the danger that the operation will be less radical than if done at first, and that infective tissues may be left behind as a source of future recurrence. 5. The value of the X-rays as a prophylactic measure after operation for primary malignant tumors, so strongly advised by most X-ray workers, at present rests entirely upon theoretical grounds. There are absolutely no data to prove such value, while there are many observations that would tend to disprove the same or reduce it to a minimum. It will require many more observations and a much longer period of time before a positive opinion can be expressed. In advising such treatment after operation we should tell the patient that it is entirely experimental, and, furthermore, he should not be kept ignorant of the fact that in a number of cases prolonged exposure to the X-rays has caused cancer in a previously healthy individual.

DR. CARL BECK spoke on

THE X-RAY IN SURGICAL DIAGNOSIS.

He emphasized particularly the value of the rays in the recognition and treatment of fractures. Here, he said, the whole science had been revolutionized. Whereas formerly text-books were written on this subject, and the nature and treatment of various fractures were fruitful sources of controversy, this entire field of surgery could now be covered in a few pages. The X-ray showed exactly what the condition was, and when we knew that, the treatment naturally suggested itself. If there was no displacement, there was, of course, no need of any replacement. But it was necessary to know positively that there was no displacement, and the X-ray showed this. As to the matter of splints, he personally preferred the plaster-of-Paris dressing. Through this it could be seen whether a fracture were really reduced or not, and if it was not reduced the dressing must be removed, the reduction effected, and the plaster re-applied. The X-ray was also a great source of protection to the surgeon, for if he could furnish, by means of a skiagraph, positive proof of the great severity of an injury, he could not be

held responsible in case the result of treatment were not altogether satisfactory. In addition to fractures, Dr. Beck referred to the value of the rays in the recognition of foreign bodies, exostoses and sequestra, and different forms of bone disease. In connection with his remarks he showed numerous skiagraphs illustrating the various conditions referred to.

DR. ROBERT ABBE spoke on

THE VALUE OF RADIUM IN SURGERY.

He said that the great difficulty in obtaining radium of sufficient strength was due to the fact that its source of supply was very limited. The effect of pure radium bromide was recognized as similar to that of the X-ray. It had all the qualities of the latter, and also some additional ones of its own. The radium seemed to exert a more intense action on morbid than on healthy tissues, and, of the former, carcinoma and rodent ulcers of the face were especially amenable to it. It possessed the same penetrative power as the X-ray, and apparently produced a retrograde action of the morbid cells, which were, perhaps, in the nature of slumbering-cells or "rests," and which had been allowed to grow up into morbid growths. In some cases where the Röntgen ray had failed, radium would succeed very strikingly.

To illustrate the value of radium in surgery, Dr. Abbe showed a number of colored wax models of various pathological conditions before and after treatment in which it had been successfully employed. Among these were cases of warts on the face and hands, and he said that any such simple hypertrophic growth could be absolutely cured by means of radium. A giant-celled sarcoma of the lower maxilla had very nearly disappeared after fifteen treatments. Here the effect of radiumization was to cause the deposition of ossific matter, and he said it had been interesting to note how the tissue of the part gradually became more and more gritty, until new solid bone finally resulted. In a case of sarcoma of the eye-lid the little tube containing the radium was allowed to remain in contact with the part for one hour four times in the first week; after which nothing more was done. In eight weeks the growth was entirely gone, and at the end of a year there had been no recur-

rence. In an epitheloma of the face in which the radium was applied for one hour on seven successive days the case was perfectly well at the end of five weeks. Rodent ulcers of the skin, from epithelioma, were entirely cured by the treatment, and he thought that this result could be obtained in every case of the kind. A typical case of lupus of twenty years' standing had been cured after seven applications, and one of fourteen years' standing after eight applications. The same gratifying result had been secured in a case of carcinoma of the lower eye-lid and in one of exophthalmic goitre. In the latter there had been a slight recurrence at the end of a year, but the trouble promptly disappeared under the external application of radium. In a case of cancer of the tongue the growth had been very markedly diminished. There was now merely a little furrow left, and he hoped shortly to be able to report a complete cure. With such results as these accomplished, he could not but believe that in radium the surgeon had a decided addition to his armamentarium.

DISCUSSION.

DR. HENRY G. PIFFARD said that in the matter of diagnosis the X-ray had unquestionably been a boon to the world. The case was different as regards its therapeutic value, and he was not an enthusiastic advocate of its use in the treatment of disease. He had seen so much harm done by it, and had seen and heard of so many cases which could have been treated to better advantage in other ways, that he had not resorted to it to the extent that many had done, nor did he value it as much as he did other and older remedies. Many men used the X-ray who had not a proper knowledge of the subject. A man who bought an X-ray apparatus and turned on the switch did not thereby make himself a radio-therapeutist. The treatment could not be administered properly without a competent knowledge of the rays themselves. The majority of cases of skin diseases and superficial affections could be cured more easily and more cheaply by methods that were in vogue before the introduction of the X-ray. There were two conditions of the skin, however, where the application of the ray was apparently of special value, namely, mycosis fungoides and ring-worm of the scalp.

DR. EDWARD B. BRONSON said that in the short time allotted him he would briefly refer to the good effects of X-rays in some of the principal forms of diseases of the skin. Much has been said and written about the results achieved in the graver and more malignant diseases, but comparatively little about their usefulness in the common every-day affections—affections that, as a rule, yield to so much simpler methods of treatment that the resort to an agent so formidable as the X-rays would seem to many perhaps like taking a club to kill a mosquito. To be sure, we *can* make of the X-rays a most dangerous club, but the force is not an uncontrollable one. As in the application of other forces it is a question of degree, of proper adjustment, of dosage.

Such simple affections as acne, rosacea, rebellious callositus of the palms and soles, psoriasis, inveterate squamous or psoriatic forms of eczema, and many other chronic cutaneous troubles of a superficial character, when they do not readily yield to the commoner methods of treatment, may often be made to succumb to Röntgen radiation with a facility that is surprising; nor need there be any ill after-effects worth considering. Thereby not only may the skin be restored to its normal appearance in a comparatively short period, but also in many cases will the disposition to recurrences be markedly diminished.

What the precise action on the tissues is on which the good results of radiation depend is still a mooted point and a question he would not pretend to answer. Most of the affections above referred to are chiefly dependent on anomalies of growth in the epidermis, though in others it is the vascular element which predominates. According to many authorities it is the epithelium that shows the first and chief X-ray effect. This is disputed, however, and the trend of opinion at present is to regard the vascular implication as primary and paramount, the action on the epithelial cells being secondary. With either interpretation would the good effect in the diseases we are considering be explained. The *tendency* of the action, whatever it be, is to produce involution or atrophy. Newly formed cells are the first to undergo destruction and through some alterative action on the blood-vessels morbid

activity is inhibited. The problem is to avail ourselves of this *involutional* tendency just to the extent of counteracting the disease process, without overstepping the margin of safety, without doing appreciable damage. This, Dr. Bronson believes, is feasible.

It often happens that the best results follow a slight local inflammatory reaction. This is especially true of acne and rosacea. The reaction should be slight but definite, just a moderate degree of erythema. The sooner this is effected, the better and the less prolonged the treatment. To what he calls the principle of reaction, Malcolm Morris attaches great importance in the cure of many chronic diseases. It is very doubtful, however, if here the same degree of reaction by other agencies would amount to the same thing. But that it may be an important element is well illustrated in the treatment of psoriasis by chrysarobin, where the rapid subsidence of the lesions is always most noticeable just as the reaction point is reached. Morris refers to a case in which, after unusually severe treatment with chrysarobin, attended with much cutaneous inflammation and general toxæmia, there was not only a rapid disappearance of the psoriasis but also no subsequent return of the disease. Perhaps in the treatment of psoriasis with the X-rays a quicker and more permanent result would be obtained were the radiations pushed to the reaction point. This the speaker had never ventured to do, as the lesions disappeared rapidly enough under the combined use of the rays and chrysarobin. But it was always the rayed patches, even if the worst, that showed the most rapid involution, much more rapid than those treated only with chrysarobin. He was also inclined to believe that the rayed areas are less disposed to relapses.

As to the use of X-rays in hirsuties, which might be classed with epithelial anomalies of the skin, notwithstanding the fact that so many discouraged it, his own experience had not been unfavorable. For some bad cases it answers better than electrolysis. It is certainly much less tedious and disagreeable, and while it does cause some wrinkling of the skin in severe cases, especially about the neck and chin, the disfigurement need be no greater, and is usually less, than that of the little pitted scars which the electric needle would of necessity leave in cases of like character.

Much caution should be used in exposures about the mouth, and the upper lip is a very unfavorable site for X-ray work, as it is indeed for electrolysis. The two methods can often be combined with advantage, thereby curtailing the duration of treatment. After a certain effect has been produced by irradiation the electric needle will remove remaining hairs with greater facility than before. Indeed, there are few if any diseases in which the use of X-rays is to be commended as an exclusive method of treatment, but as an adjuvant to other methods, or rather as an extra force introduced for the purpose of overcoming an inertia otherwise intractable, it has a distinct and extraordinary value, though a value unfortunately not devoid of risks.

DR. CHARLES W. ALLEN differed with Dr. Piffard as to the therapeutic value of the X-ray, especially in dermatology, and said that by means of it he had obtained the best results in a considerable variety of skin afflictions. Neither could he agree with surgeons like Dr. Coley, whose motto seemed to be, "Excise everything."

DR. J. EDWARD STUBBERT spoke of the value of the X-ray in the early diagnosis of pulmonary tuberculosis, stating that by means of it the condition could be detected before there were any physical signs whatever.

DR. SINCLAIR TOUSEY spoke as follows: In discussing the subject of the application of the X-ray in surgery, there are two points to which I would like to call attention. One is the fact that recent improvements in technique have enabled us to take pictures through the entire thickness of the head of such a degree of clearness of detail as to be of positive assistance in the diagnosis of the conditions in the antrum and other pneumatic sinuses, such as the ethmoid cells, the frontal sinus, and the cells in the body of the sphenoid bone. I have brought two such pictures here to-night, one of them being a lateral radiograph of a man about 45 years of age, a physician who had had all of his upper teeth extracted for pain, and had had the ethmoid cells scraped out. The trouble had continued unabated in spite of all of these operations, and the X-ray picture, as you see, shows that the antrum is full of pus. This has been evacuated and now it is hoped that the trouble is completely cured. The other is an antero-posterior picture of a case in which simi-

lar trouble was suspected, and the X-ray examination revealed the fact that one antrum was half full of pus. The prints do not show as clearly as the negative glass plate, and this is especially advantageous when examined by transmitted light in a negative examining box. There all the sutures between the different cranial and facial bones show perfectly, and the exact outline of the different pneumatic sinuses, and even their cellular divisions, can be made out.

The second feature of X-ray work that I wish to call attention to is the matter of dosage. The importance of a knowledge of the amount of X-ray which it takes to produce certain physiological effects is of paramount importance. It is necessary to know this to enable one to safely apply the X-ray for the examination of difficult cases, and also in order to produce the desired curative effect in cases of cancer and similar trouble where the X-ray is used for treatment. My own method has been in constant use for almost a year now, and is applicable to each and every exposure. Every time that the X-ray is turned on it is perfectly practicable to estimate its intensity with a reasonable degree of accuracy by means of this intensimetric scale. This is based upon the measurement of the distance to which the X-ray will carry and still produce visible fluorescence in a fluoroscope which is held to the examiner's eye. For instance, if I can go 12 yards away from the tube and still see a distinct brightness in the fluoroscope when the X-ray is turned on, distinguishing this from the darkness which occurs when the attendant turns off the current, then I consider that the tube is giving out rays of an intensity of 12 Tousey. If, on the other hand, the radiance is visible in the fluoroscope at a distance of only 6 yards, the intensity of the radiance is put down as 6 Tousey. There is not time this evening to give a complete table of the times of experiment and the distance from the tube to the patient, which the author has found to yield certain definite results with different degrees of intensity as determined by this method of his, but it may suffice to say that by using this method prescriptions can be written for X-ray treatment—that is, the application for the treatment of such a case shall consist of rays of an intensity of 6 Tousey, a penetration of 5 Benoist with the anticathode of a tube at a distance of 10

inches from the nearest surface of the patient and a duration of exposure of 5 minutes, and that these applications shall be made twice a week. This is a typical prescription for the treatment of a case of cancer.

DR. L. G. COLE said that in the case of fractures it was very desirable that radiographs should be taken from different positions. If the picture were taken from only one position it was quite possible that the fragments might *appear* to be apposition when this was really not the case.

DR. J. HERMAN BRANTH said: About two years ago I read before this Association a paper on Röntgen rays, in which it was maintained that these rays should be manipulated with caution and with a knowledge gained by practical experience. To rely for diagnostic purposes simply on a fluoroscopic examination will often lead to mistakes. A skiagraph is far more reliable, and yet, let me show you skiagraphs of bones, and the bones themselves, which latter are in separate pieces, while in the pictures the line of separation is concealed and invisible. From these photographs it is clear that the plane of the fracture should be placed vertical to the plane of the photographic plate in order to bring out the fracture. If, however, the plane of the fracture approaches parallel to the plane of the photographic plate, a fracture may be concealed and invisible, even on the sensitive photographic plate. In fluoroscopic examination the platino-cyanide of barium screen occupies the position of the photographic plate, but the photographic plate is very much more sensitive than the human eye to fine variations of light and shadow; hence in framing a decision the photographic and not the fluoroscopic picture is to be relied upon. To completely avoid errors, skiagraphs at different angles should be made. I have here two pictures, which were exhibited two years ago (the same leg in two different positions). In one picture the callus is shown, in the other a growth of bone from displaced periosteum is seen; the first picture does not show the growth of bone from the periosteum, and the second does not show the callus. The two skiagraphs were taken $3\frac{1}{2}$ years after the accident. Here are two skiagraphs showing Colles' fracture of the arm. These were taken while the arm was in plaster-of-Paris dressing, and it was claimed as having been set. The skia-

graphs show that the fragments of the radius are not in proper apposition. These two pictures are at right angles, and were taken shortly after the accident.

As a therapeutic measure Röntgen rays furnish perhaps even more variable results than in skiagraphy, for here enter as factors the idiosyncrasy of the patient, the constitutional condition, the progress, the speed and the stage of the ailment. If it is too late, even the best remedy will avail nothing, and it would be an error to condemn a remedy on such experience. In lupus I have seen good results with X-rays. During my travels in Europe last summer I visited the London Hospital, where there are twelve lamps for the treatment of lupus on the Finssen system. Eight of these on two chandeliers are of the Finssen telescopic form, the four others are plain arc lights with reflectors. I was informed by the person in charge that it takes one to two years to cure a patient, and that one to two applications of one hour each are given to each patient daily. The two telescopic apparatus of four tubes each are rated at 100,000 candlepower each, and are energized by a separate electric plant. What an enormous expense! Two years ago I had a patient with lupus before this Association. Here are the photographs before treatment, after eleven applications, and when cured. Her treatment occupied only several months and three sittings per week were given. For the London Hospital it is claimed that the Finssen light proves in some cases of lupus a better remedy than the X-rays. May it not be that the constitutional condition is a factor? Another question: Are we to ride a hobby of X-ray treatment exclusively, or should we not combine with it medical treatment, to bring the vital processes into a proper balance, so that the body may be put in the best possible defensive condition and that repair may be facilitated?



Stated Meeting, April 9, 1906.

INDICATIONS AND METHODS IN DISEASES OF THE INTESTINES AND PERITONEUM.

A COMPARISON OF THE RESULTS OF THE TREATMENT OF TUBERCULOSIS OF THE PERITONEUM BY SURGERY AND BY THE CONSERVATIVE OR EXPECTANT METHOD.

The Introductory was by DR. JOHN C. HEMMETER, of Baltimore, Professor of Physiology and Clinical Medicine in the University of Maryland, who, after speaking of the advantages of an early diagnosis in intestinal cancer, took up this subject. The question to be decided, he said, was that of whether any so-called cure was possible by conservative treatment, and, secondly, whether operative treatment could show any better results than this. The internalist had to be prepared to meet the objection that any given case of peritonitis which he cured might really not be tuberculosis. In speaking of the diagnosis the writer referred particularly to three methods which enabled us to determine the presence or absence of tuberculosis: 1. Intraperitoneal injections of some of the exudate into guinea pigs. In three of his cases this had aided materially. 2. Injections of Koch's tuberculin. 3. The diazo reaction of Ehrlich. This had in his experience proved a very valuable aid to diagnosis in doubtful cases.

Among American authors there appeared to have been no effort made to ascertain the comparative merits of the operative and the conservative treatment of tuberculous peritonitis. Up to the year 1900, at least, and probably to the present time, the great majority held the view that this disease was almost always fatal unless treated by laparotomy. Even the most conservative internalist shared the view of the surgeon that laparotomy gave decidedly better results than conservative treatment. In fact, at one time this operation was looked upon as almost a specific means of cure. It was, therefore, very astonishing to learn that a prominent surgeon, Borchgrevink, emphasized the possibility of a spontaneous cure. Of forty-four cases reported by him in

1900, twenty-two were treated by operation and the other half by the conservative method. Among the former there were 64 per cent. and among the latter 82 per cent. of cures. Dr. Hemmeter said he himself had compiled eighty cases of tuberculous peritonitis under his own observation in hospital and private practice. Eleven of these could not be traced for a sufficient length of time to render them available for use. Of the sixty-nine cases which could be so traced, twenty had been treated by operation. Of these, seven, or a little over one-third, were cured. It was interesting to note that five of the seven patients were males. Among the forty-nine cases treated medically (in which treatment the aspiration of extreme ascitic effusion was included) there were seventeen lasting cures.

While, therefore, he could not confirm the statement of Borchgrevink, that more patients were cured under conservative treatment than by operation, his own experience proved that at least as many recovered under medical as under surgical treatment. Moreover, it was a fact that the average duration of the cures was much longer in the medical than in the surgical cases. In all cases he thought the patient should be observed by some reliable physician and reported well at least one year after the laparotomy, or after the conservative course of treatment, before we were justified in pronouncing him cured.

RECENT ADVANCES IN INTESTINAL SURGERY.

This paper was by DR. ALGERNON T. BRISTOW. He said that without complete and careful suture no method of closure or anastomosis could ever be made safe, and the first lesson which the surgeon had to learn was that stitches could be placed very close together without the disastrous results which were formerly feared. As soon as this had been understood countless had been the varieties of sutures devised, but it was a fact that there had not been invented a single form of suture in the last five years, however complicated it might be, which was not either identical with or a modification of some of the sutures of the eighteenth century. The methods of Maunsell and Connell, in which the sutures were passed entirely through the bowel, had proved that the fear of infection resulting from a through-and-

through suture, which had for a long time been entertained, was really groundless. The fact that the adhesion of the peritoneal surfaces apposed by the suture line took place so rapidly that the effusion of intestinal juices was completely prevented rendered it possible to discard all the complicated methods and adopt the through-and-through suture for end-to-end anastomosis. The past twenty-five years had witnessed the invention of a score of mechanical appliances based on one of the three types represented by the animal tube of the four monks who practiced surgery in Paris about the year 1250, the deal plate of Reybaud, and the ferules of Denans. For those surgeons who relied on apparatus to assist them in their intestinal work, the instrument maker offered an almost endless variety of contrivances of all grades of ingenuity and complexity.

The advances made in recent years in intestinal surgery might be classified as follows: Improvements in methods of suture, in apparatus, and in general technique. Some additions had also been made to our methods of diagnosis, particularly in obscure cases of appendicular inflammation, in which both abscesses and gangrene sometimes existed without much pain or tenderness, and even with a normal pulse and temperature. While the writer commended Connell's suture, he believed that the plain through-and-through suture, passing through all the coats of the bowel had the advantage in point of simplicity and ease of application, and that, provided the silk were sufficiently fine, nothing could be gained by leaving the knot within the lumen of the bowel. Speed was a prime requisite in all surgical work on the intestines. If the surgeon had a fancy for apparatus, nothing more ingenious had ever been invented than the Murphy button. It was particularly useful to those whose experience in this field of work was limited. The clamps of Laplace were excellent devices, which had the advantage over the button that they were withdrawn after the suture was complete, and hence the leaving of a foreign body within the lumen of the gut was avoided. As regarded the matter of improvements in general technique, it was plainly to be seen that the tendency among all surgeons doing much intestinal work was toward simplification and the abandonment of mechanical aids. Thus, Moynihan now en-

tirely rejected the Murphy button for the performance of gastro-enterostomy, and employed his forceps merely for the purpose of bringing the stomach and bowel in contact. The elastic ligature of McGraw, however, appeared to have all the advantages of the Moynihan operation and the button combined.

In conclusion, Dr. Bristow referred to the encouragement which was afforded by the results obtained in malignant growths affecting the intestine, in typhoid fever perforation, and in amoebic dysentery. In cases of chronic dysentery, which had resisted medical treatment, Murray had recommended right inguinal colostomy for the purpose of giving physiological rest to the affected portion of the bowel, reporting a successful case. In the same class of cases Weir and Meyer had irrigated the colon through the vermiciform appendix after opening its tip and attaching it to the external wound.

WHAT HAS SURGERY LEFT TO MEDICINE IN THE TREATMENT
OF PERITONITIS.

DR. HENRY W. BERG read this paper. Its object was to show that, while surgery was the stronghold in the treatment of peritonitis, medicine, with the basic knowledge as to diagnosis, pathogenesis and etiology which it had developed in the past few years concerning this affection, had laid the groundwork for the successful surgical treatment, and at the same time had amplified our purely medical curative resources to an appreciable, if more limited, extent. Aseptic surgery and improvements in surgical technique, he said, had done so much in the successful prevention and treatment of peritonitis that a discussion of the medical treatment of the disease should properly be limited to the consideration of such treatment as applied to non-surgical forms of peritonitis and such types of peritonitis as, while amenable to surgical measures in their inception, had progressed beyond the aid of surgery. He thought it would be profitable to classify the various forms of peritonitis into diffuse and circumscribed, acute and chronic. In addition, it was of importance, from a therapeutic standpoint, to recognize in a given case whether the pathological process

was aseptic or non-purulent (fibrinous or serous peritonitis), or whether it was septic, with the presence of pathogenic bacteria as a more than active factor in the inflammation. Finally, belonging in a class by itself and especially interesting from a medical standpoint, there was the peritonitis due to a specific organism, tuberculous peritonitis. But, even when a peritonitis had been classified in accordance with these factors, there remained still to determine the point of origin. From a therapeutic standpoint this was perhaps the most important factor, for its solution, when practicable, carried with it the determination as to whether the case was one in which surgical procedures were the only logical therapeutic measures (at least at the beginning, or even for the prevention of peritonitis), or whether the case was properly a medical one.

Having presented such an etiological classification, he said it would be seen that in by far the largest proportion of the kinds of peritonitis mentioned the mere recognition of the point of origin necessitated surgical intervention at its inception, and even at any stage, provided the condition of the patient was such that operative intervention still offered a faint hope of success. Thus, there could be no question that peritonitis due to perforation of a hollow viscus, provided the diagnosis was positive, was to be treated surgically. Medicine, however, had a legitimate and important function even in these typically surgical forms of peritonitis, and that was the prophylactic one—the prevention of the perforation. In speaking of perforation in typhoid fever, Dr. Berg called attention to the danger of causing this accident by injudicious palpation of the abdomen. In connection with this subject of prophylaxis, it was well to remember that medical means played an important part in the timely recognition and cure of many conditions which would ultimately lead to virulent types of peritonitis if allowed to progress without treatment. The types of peritonitis due to spreading by continuity from more or less general or localized inflammations, such, for instance, as the peritonitis complicating entero-colitis in young children, were as a rule examples of acute diffuse peritonitis of a non-purulent type, and in no sense a field for surgical interference. Non-suppurative local peritonitis complicating non-suppara-

tive cholelithiasis and non-suppurative hepatitis was not necessarily a surgical type of peritonitis. He believed that puerperal peritonitis, with or without septicæmia, should not be treated by laparotomy, and that the consensus of opinion was in favor of medical means. He would not exclude from such measures the medication and curetting of the endometrium. Again, peritonitis secondary to surgical operations, as well as peritonitis which had not been relieved by surgery, looked to medicine as its last resort. Tuberculous peritonitis was considered by many as a surgical affection; by others of equally competent authority it was maintained that the results were better without surgical intervention. He believed that when we had arrived at a specific for tuberculosis this type of peritonitis would unquestionably be purely medical. The best explanation of surgical cures appeared to him to be on the basis of Metchnikoff's theory of immunity and cure in infectious disease processes. On this hypothesis the incision through the parietal peritonæum brought to the field of operation a large excess of leucocytes, which by their phagocytic activity destroyed the tubercles and bacilli and set up a reparative process.

With regard to the treatment of non-surgical types of peritonitis, Dr. Berg did not have much confidence in the use of any of the bacteriolytic sera, the bacteriolysis produced by them being so limited that but small numbers of bacteria were destroyed by even the largest possible doses. In every case of acute general peritonitis an investigation into the cause was essential, and when in any instance we had determined that medical rather than surgical treatment was called for, the prime necessity, so far as the patient was concerned, was the relief of pain. This was best accomplished by the hypodermatic injection of morphine, in quantities just sufficient for this purpose, and no more. Cathartics were contra-indicated, except at the very beginning. Here the method of giving Epsom or Rochelle salt or calomel in divided doses had many advocates, both in this country and in England. In cases believed to be of rheumatic origin, and also in some other cases of acute general non-suppurative peritonitis, he had employed rectal injections of sodium salicylate once a day with excellent results.

So far as the general septicæmia and toxæmia were concerned, we could do as little here as we could do for these conditions in other diseases. While Crédé's ointment might perhaps prove beneficial in some instances, he was disposed to look with more favor on hypodermoclysis with normal salt solution into the breast and thighs. Absolute rest and a liquid diet were essential, and if there was much vomiting, rectal feeding was called for. The Leiter coil with ice water might be employed for the further alleviation of pain. The ice bag was absolutely contra-indicated on account of its weight and bulkiness, while hot applications and poultices rendered most patients uncomfortable, besides weakening them by the perspiration they encouraged. Blisters were of service only where the area affected was limited, as in pelvic peritonitis. For the pain, limited hydrotherapy, applied in such a way as not to disturb the patient, was most desirable. Digitalis, adrenalin, whiskey and caffeine were the appropriate cardiac stimulants, strychnine being contra-indicated on account of its promotion of peristalsis. The medical treatment of tuberculous peritonitis called for the ordinary régime suitable for tuberculous patients. In addition, iodine might be locally applied and inunction of the abdomen over the tumor masses with mercurial ointment employed. The accessibility of the lesion in this affection would seem to encourage a trial of radiotherapy.

THE SURGERY OF THE PERITONEUM.

DR. LEWIS S. PILCHER read this paper. Any systematic consideration of this subject, he said, would naturally include new growths, traumatisms, and infections. Of the first of these he spoke but briefly. Traumatisms included both the grosser lesions classified as wounds and those lesser, more superficial injuries in which the peritoneal surface was merely irritated. The remarkable regenerative power of the peritoneum had its unfavorable side, for, in the more or less extensive adhesions remaining as the result of attempts to repair traumatisms or overcome infection, there were created conditions which might entail disability, interfere with functions, produce pain, and limit and render extra hazardous any subsequent attempts at surgical relief. In order to prevent adhesions, it was essential that all un-

necessary handling or friction of the serosa should be avoided. Under the head of avoidable rough handling of the serosa might possibly be properly included the routine packings with masses of gauze adopted by many surgeons for isolating an intraperitoneal operative field. The presence of blood clots, even in minute quantities, had been demonstrated to be a prolific cause of adhesions; hence it behooved the surgeon not only to avoid sepsis, but to be scrupulous in securing haemostasis. In the effort to get rid of the mass-pedicle ligatures which had proved productive of so much harm in the peritoneal cavity, there had been devised the various models of crushing clamps. As they left behind a long line of crushed and devitalized tissue to invite adhesions and infection, their use smacked of a mechanical surgery in which anatomical knowledge and the definite application of a certain and delicate surgical technique were disregarded. A most important means of preventing adhesions and securing a smooth after-course, in cases where peritoneal denudations had been necessary, was the restoration of a continuous peritoneal covering over the raw surfaces left. While the proposition of Morris to employ a cover of a sheet of absorbable membrane prepared from the peritoneum of the ox as a protection to a denuded bowel surface until the normal epithelial covering could be restored was an attractive one, Dr. Pilcher said that personally he had never been able to overcome his repugnance to leaving such a foreign body behind in the peritoneal cavity. Another important element in the problem of preventing adhesions was drainage, and here certain general principles might be accepted as now well settled. A bleeding cavity, or an infected cavity, which it is impracticable to thoroughly disinfect, must be drained. A walled-off cavity, all the recesses of which could be reached through a free external incision, might be completely packed with iodoform gauze; in other cavities, more deeply situated or the depths of which were not so freely accessible, should be drained by glass or rubber tubes of large calibre. Whenever capillary drainage seemed indicated, it was perhaps best effected by the insertion to the bottom of the spaces to be drained of one or more good-sized rolls of ordinary lamp-wicking, the greater part of which was protected by a smooth, non-ad-

hesive covering of rubber tissue. The concluding portion of the paper was devoted to peritoneal infection, between the results of which and the observations already made upon traumatisms a very close relation, the speaker said, was found to exist in the important fact that, while a normal peritoneum might dispose of comparatively large quantities of infective matter, chemical or mechanical irritation, and especially the presence of peritoneal wounds or abrasions, interfered decidedly with this self-protective power and favored the development of the worst phases of infective invasion.

DISCUSSION.

DR. ROBERT T. MORRIS, in referring to Dr. Bristow's remarks in regard to the operative treatment of amoeboid dysentery, said he recently saw a woman from Panama who was suffering from that disease, and who, in order to get the benefit of a rapid cure, did not hesitate to have the abdomen opened, so that the bowel could be flushed from above through the appendix, rather than by the older and slower method from below. The speaker said he fully agreed with Dr. Berg's statement that palpation of the abdomen in typhoid fever could be carried to a dangerous extent, and the expert should know how much and how little to palpate. In dealing with acute cholelithiasis, Dr. Morris said he rather favored a radical operation in order to prevent the formation of adhesions which would otherwise result, and which often gave rise to much discomfort. In puerperal peritonitis, he agreed with Dr. Berg that an operation would not remove the bacteria circulating in the blood, but he believed it *would* remove the focus which was the source of the bacterial invasion, and by doing this, the scale was sometimes turned in the patient's favor. In tubercular peritonitis he was inclined to accept the theory that the beneficial effects of the operation are due to the hyperleucocytosis resulting from opening the abdominal cavity. In peritonitis from appendicitis, or other local cause, the indications were to remove the focus of infection, and trust to leucocytosis to do the rest. The peritoneum, as Dr. Pilcher brought out, had a surgery of its own and had its own powers of resistance. For example, a man who received a slight stab-wound of the peritoneum was in much

greater danger of developing a general peritonitis, in spite of operation and every aseptic precaution, than he would be if he had a malignant growth the removal of which would require an extensive resection of the gut. In the latter case, in spite of careless handling of the bowel, primary union would doubtless follow, because the malignant focus had already called out the patient's powers of resistance, affording that kind of protection which guards against bacterial invasion, while the small stab-wound in the former case afforded no such protection.

In speaking of the value of Cargile membrane in abdominal work, Dr. Morris said that while it had its limitations, there were certain cases in which it could be used to decided advantage. In many cases where he had used it to relieve the discomforts caused by adhesions the patients had been much gratified with the result, and in some of the more extensive cases, where the adhesions could not be relieved at one sitting, they had voluntarily returned for further operative work. The same was true of cases where the membrane had become absorbed, and the adhesions had reformed. In properly selected cases, one operation was usually sufficient, but in extensive cases it might be necessary to do the work piecemeal. The willingness of patients to return for repeated operations was pretty good evidence of their appreciation of its beneficial effect, and counted for more than negative testimony gained from experiments like those of Craig and Ellis on dogs. Dogs were apt to have more severe peritoneal reaction than rabbits, and rabbits more than the human species.

DR. ALBERT A. BERG said that the points brought out by Dr. Pilcher concerning the handling of the peritoneum could not be too strongly emphasized. The surgeon of the beginning of the twentieth century was but little in advance of his colleague at the beginning of the aseptic era in the methods of dealing with the peritoneum, and the great advances of the future would be along the lines suggested by Dr. Pilcher; namely, greater care in manipulation, less traumatism, less interference with the protective power of the peritoneum, quicker work, and more careful asepsis. Dr. Berg said he did not agree with Dr. Morris that under certain conditions the peritoneal cavity could be invaded

with comparatively little danger as regarded the occurrence of sepsis, and he thought that every possible safeguard in that connection should be taken. As regarded intestinal anastomosis, the speaker expressed the belief that all mechanical devices, especially the Murphy button, would ultimately be the resort of only beginners in surgery, while the more experienced would confine themselves to the suture operation, which could be done at the expense of only a few minutes' more time, and was not open to any of the objections that had been raised against the use of a mechanical device. During the past five years, Dr. Berg said, he had seen four fatal cases of necrosis of the bowel following perforation produced by pressure from the Murphy button.

DR. A. ERNEST GALLANT, referring to tubercular peritonitis, said he recalled two cases in which he had done laparotomy which illustrated the marked differences in the condition of the peritoneum in different instances. The first, an emaciated woman with tensely distended abdomen, had several large masses above the umbilicus. On opening the abdomen these proved to be made up of intestine and tubercular material enclosing fluid. The sac was opened, and the whole cavity washed out with saline solution. The patient did badly. The abdomen refilled at once and she died four days later. Perhaps if he had done less handling and irrigation she might have lived, though this variety did not respond to cœleotomy as did the class of cases characterized by miliary involvement of the whole peritoneal surface, visceral and parietal. The latter was the condition in the second case. This patient had a leakage through the wound, which was purposely kept open for nearly eight months. She now weighed nearly double, and did the housework for her family. Of puerperal septicæmia cured by hysterectomy he had seen one case in the hands of a colleague, but the *prevention* of infection was the great desideratum. Along this line he had made use, and with success, of the bivalve uterine drain, which affords free vent to the uterine secretions, with rapid subsidence of the temperature and pulse, and prevents the toxins and bacteria from entering the sinuses and lymphatics. When confronted by peritonitis in young girls, he thought one should always look for vaginal gonorrhœa. The great difference

between perforative and non-perforative peritonitis seemed to lie in the fact that when sufficient time has been or can be allowed, the peritoneum will adapt itself to the invasion of its domain, and so be able to withstand surgical manipulation, as in six cases recently operated on by him for pyosalpinx, with large amounts of pus, all of which made very smooth recoveries. The greatest advantage of the Trendelenberg posture was in that it removes the intestines from the field of operation and minimizes handling and trauma.

Stated Meeting, May 14, 1906.

RABIES AND ITS ETIOLOGY.

The first paper was by DR. IRA VAN GIESON on this subject. After discussing the possibility of the occasional spontaneous development of rabies in dogs and other animals, he spoke of a new, rapid and certain procedure for the detection and study of the Negri bodies in hydrophobia. This method was particularly valuable in making the diagnosis of street rabies in dogs, as the whole procedure could be completed in two or three minutes.

The method consisted of two steps: first, the preparation of a form of smear of the central nervous system, and, secondly, the application of a new staining solution. The important part of the method was the preparation of the smear technique, which was valuable not only for the study of rabies and the Negri bodies, but for the normal and pathological histology of the nervous system in general. The speaker had used this method for several years in the study of the nervous system, particularly in the investigation of the normal structure of the neuron bodies, and in their degenerative changes in a variety of nervous and mental diseases, and was at present attempting to apply the technique in the study of the neuro-fibrils. If smears of the nervous system were made by the ordinary fashion of preparing blood smears, they were of little or no value. If, however, a portion of the gray matter, say the size of a bird-shot, was placed on one end of the slide, then covered with a cover-glass, gently squeezed out with the ball of the finger, and the cover-glass shifted across the slide, very beautiful preparations of the neuron bodies, with their dendritic and axonal prolongations, might be secured.

The method was particularly valuable in reconnoitering pathological changes in the nervous system, and determining the plan of technical procedure for the subsequent study of sections. In its application to the study of the Negri bodies, these squeeze smears, dispensing with the time and trouble of preparing sections, might be fixed while moist for a few seconds in methyl alcohol, or dried

in the air. The smears were then stained by pouring a few drops of the staining solution over them, and held over the flame until the dye steamed. They were then rinsed and dried in the air, and this finished the procedure.

The stain was prepared as follows: Add to 10 c.c. of distilled water two drops of a saturated alcoholic solution of rose anilin violet and two drops of a saturated aqueous solution of methylene blue, diluted one-half with water. The Negri bodies took a distinctive deep crimson color, with their chromatin particles blue.

Dr. Van Gieson then described and illustrated with charts the structure of the Negri bodies, and stated that this method, in the hands of Dr. Williams, of the Research Laboratory of the Board of Health, had added very materially to the knowledge of the structure and significance of the Negri bodies. He also referred to some experiments made in conjunction with Dr. Poor to determine the significance of these bodies. These experiments consisted in subjecting portions of the nervous system of rabid animals to various chemical agents, with a view to destroying either the bodies or the rabic virus, which could be confirmed by animal inoculation.

DR. ARTHUR C. BRUSH read a paper entitled

A STUDY OF SEVENTY CASES OF BRAIN TUMOR.

He said it was only by collecting the facts furnished by a large number of cases of brain tumor that a substantial basis could be formed for a study of the problems arising in the various questions at issue in this class of cases. The seventy cases which he presented had come under his care at the Kings County and Brooklyn Eye and Ear Hospitals. Tumors of the brain were unquestionably one of the common diseases with which both the neurologist and general practitioner had to deal, and, from the increasing frequency with which the diagnosis of this condition was made, it was fair to assume that these tumors, like similar growths in other parts of the body, are becoming more frequent. On the other hand, however, it must be admitted that this increase was more apparent than real, from the fact that medical science had rendered us more competent to diagnose the condition.

That tumors of the brain occur at all ages was manifested by the extreme variation in his cases, from six months to seventy-two years. The ages of his cases supported the general fact that these growths are most common between 20 and 30, less common between birth and 20, and least common after 50. This greater frequency during middle life was in part due to the greater frequency of the occurrence of syphilitic tumors during that period. According to Starr, syphilitic cerebral tumors were never hereditary. The fact, stated by all writers, that brain tumors are more common in males than in females, was well supported by his cases, 41 occurring in the former and 29 in the latter.

As to the real cause for the occurrence of the most of these growths, medical science was to-day as ignorant as it was as to the occurrence of such growths in other parts of the body. Fifty-three of his cases were without known cause. Five were shown to be tubercular, while six occurred during active syphilis, and recovered under specific treatment. It was not to be assumed, however, that because a brain tumor improved under such treatment it was necessarily syphilitic in character, since it was an established fact that other forms of brain tumor, especially sarcoma, may at times be favorably influenced by the administration of potassium iodide. Two others of his cases were shown to be syphilitic at the autopsy or operation. As to heredity as a producing cause, Dr. Brush was inclined to believe that, in view of the small number of cases in which this appeared to play a part, a history supporting such a hypothesis was simply a coincidence, or merely an evidence of physical predisposition which rendered the patient susceptible to the action of some other cause. He was also of the opinion that injuries to the head which were assigned by medical writers as one of the causes, were practically not to be regarded in this light. Among 3,000 cases of head injury in his experience, in only one instance was such injury apparently followed by a brain tumor, and he thought that all that could at the present time be claimed in support of this theory was that the injury called attention to or aggravated the course of a pre-existing growth. In three of his cases in which trauma had been claimed as a cause, this was shown not to be the case. The situation was furthermore complicated by the

well-established fact that a localized meningitis may at times present a clinical picture undistinguishable from that of a cerebral tumor.

As the possibility of relief depended largely upon an early diagnosis, it was evident that the nature of the disease should be recognized as soon as possible, and before irreparable damage was done; but, unfortunately, this was often an extremely difficult matter. The early diagnosis was often not made from the fact that the patient paid but little attention to the early symptoms, and did not apply for relief until the appearance of some disabling condition. In many instances the absence of definite symptoms was explained by the fact that the brain can accommodate itself to pressure which is produced gradually, and that tumors which grow slowly, and do not infiltrate, may thus reach a considerable size before symptoms occur. The slow and regular development of characteristic symptoms occurred in only 18 of his cases. In these cases the interval of time for the symptoms to attain such a degree of development as to lead the patients to seek medical aid varied from two months to ten years, though only three of them were of over three years' duration. That brain tumors are as a rule slow in their development was supported by the histories of his cases. In 62 this was the fact, while in the remaining 8 the duration was from two to eight weeks. Four of the latter were undoubtedly syphilitic; going to support the common observation that syphilitic cerebral neoplasms are of rapid growth.

The fact that the mode of invasion differs in different instances was well shown in his cases. In 20, convulsive seizures constituted the most prominent early symptom. These seizures were of three types: (1) the general epileptic, or grand-mal; (2) the petit-mal; and (3) that in which the attacks consisted of localized spasm, without loss of consciousness. Next to convulsive disorders, defective vision was the most common early symptom for which the patient sought relief. From the fact that neuro-retinitis occurs in 80 per cent. of all brain tumors it might be supposed that this would be even a more common early symptom; but it was also a well-established fact that a high degree of such neuro-retinitis may develop before the patient

notices the visual defect. Severe headache, associated with nausea, vomiting and vertigo, was the early clinical picture in four cases for a period varying from three to twelve months, and during this period the real nature of the disease present was a matter of doubt. In three cases an ataxic gait, with increased knee-jerk and vertigo, existed for three years before the development of other symptoms, in three the first symptom was the slow development of hemiplegia, and in two a subjective vertigo existed alone for a period of three years and eight months. In four of his cases the existence of a brain tumor was discovered only at the autopsy. During life one of these was diagnosed as paretic dementia, one as chronic dementia, and two as major-hysteria. Three other cases, not included in his list of seventy cases, were diagnosed as brain tumor, but were found on operation to be cases of localized meningitis.

The nature of a brain tumor, as was admitted by all, was merely speculative during life, unless the case came to operation. Among his own cases the character of the growth was determined in 52. This list included 11 syphilitic cases which recovered under treatment. Of the others, 9 were of glioma, 14 of sarcoma, 7 tubercular, 4 cystic, 1 of angioma, and 1 of psammona.

The results obtained by treatment in his cases were as follows: 14 recovered under medical treatment, 19 were improved by surgical means, 13 died, and 26 passed from observation as unimproved. The only drugs known to favorably influence the growth of a tumor were potassium iodide, mercury and arsenic. In his experience no form of mercurial treatment was so effective as that by inunction. Brain tumors which did not quickly show some improvement under medicinal treatment were, if located in accessible regions, proper subjects for surgical interference, for the reason that death was the usual termination. Operation, however, should not be too hastily advised, nor should too sanguine a promise of success from it be held out, because we could not thus repair the actual damage done by the tumor, while damage incident to its removal might cause increased or new paralytic symptoms. It was also true, however, that by operation we might sometimes improve or cure paralytic conditions when these were due to pressure

by the growth on adjacent parts. It was furthermore true that, as in cerebral hemorrhage, some improvement might occur in the paralyzed parts from the functions of the injured cortex being supplied by other parts of the cortex. The patient and his friends, then, should be made clearly to understand that the operation was undertaken for the purpose of arresting the disease, rather than for a cure of all the symptoms.

In the 19 cases which were operated upon the tumor was found to have been correctly localized in 18. In the remaining case the symptoms present were those usually observed in lesions of the lateral lobes of the cerebellum, but when the patient died the growth was found to be in the frontal lobe. This case afforded evidence of the correctness of the statement that tumors may give rise to symptoms referable to other parts of the brain, either by pressure on adjacent tracts or by disturbances of the circulation. In two of the cases the tumor was found to be unremovable by reason of its size, indefinite outline, and malignant nature. Having given a summary of the remaining 16 cases, Dr. Brush concluded as follows:

The established facts, then, in the surgical aspect of brain tumors would seem at the present time to be: that no case should be subjected to operation until it has failed to improve after a month's treatment by the iodides or mercury; that the non-malignant nature of the tumor should be established by its slow growth; that we should be able to clearly localize its position in a surgically accessible region; that it should be of moderate size and have clearly defined outlines for removal to be attempted; that in subcortical tumors a moderate incision of the cortex does not cause any serious consequences; and that the best results are to be obtained in early cases which show but little evidence of brain destruction.

The next paper was by DR. EDWARD D. FISHER on

APHASIA.

After giving some definition of terms, he said that speech, as a faculty, was acquired through sound, not sight. Many very intelligent persons might not be able to read or write, and this was not true, of course, in the converse, if we

excepted deaf-mutes and the blind. Aphasia was properly divided into motor and sensory; both functional areas of the brain being necessary for the acquisition of speech. We must have the receptive centre for hearing the spoken word, and also the motor centre to translate these memories of words into expression. And here, again, it was not so much the paralysis of the muscles necessary to articulation which he referred to when speaking of motor aphasia, as the loss of the memory of the proper combination of the necessary muscular acts for articulation. Hence the term ataxic aphasia. Speech was synthetic, for while its acquisition was essentially through the hearing and motor centres, and these were probably the only necessary means, still the sight of the written word, as we later acquired the ability to read and write, aided largely in speaking. In aphasia this might be of service in the re-acquisition of the impaired function. We could include also as an aid to speech our general information concerning the subject or object to be spoken of; the memory associations being all called up at the same time.

Knowing the special centre for motor speech (Broca's convolution) and that for the perception of spoken language (the first temporal), we could suppose lesions involving these centres alone and giving the corresponding disturbances of speech; or, again, we could conceive of the lesion affecting the association fibres between these two centres. Motor aphasia was not always complete, as some few words or expressions might remain. In many cases of motor aphasia, incomplete and associated with hemiplegia, there was considerable amnesic aphasia; *i. e.*, a loss of the memory of the names of things, with no impairment of the understanding of them when spoken. This was probably due to the involvement of the fibres (island of Reil) passing from the first temporal to the third frontal convolution. Persons thus affected possessed the power of gesticulation, and could thus express what they wanted, but were unable to answer definite questions either by speech or writing. Agraphia was almost invariably present in amnesic aphasia; showing the secondary and subsidiary relation of writing to speech itself. This was the commonest form of aphasia. So-called sensory aphasia consisted in a loss of the memory

of the word when heard. In this word-deafness we might have perfect power of speech, although the patient did not understand when spoken to. Still, in many such persons we had a form of paraphasia, or jargon speech.

DISCUSSION.

DR. WILLIAM M. LESZYNISKY said there was one point in regard to the subject of brain tumors that should be emphasized, particularly to the general practitioner, namely, that every patient, young or old, who complained of continuous headache, either with or without vertigo or vomiting, should be subjected to an examination of the ocular fundus. The importance of this was evident, for although optic neuritis did not occur in every case of brain tumor, in the early period of the disease, it did occur, sooner or later, in from 80 to 90 per cent. He could recall a number of cases in which the patients were totally blind when they first came under his observation, the symptom resulting from an optic neuritis which was primarily due to a brain tumor. The speaker had seen six cases of brain tumor during the past year, and three of them had come to autopsy. Two of these cases were rather remarkable, and presented the following analogous features: The patients were intelligent young adults; both had frequent attacks of intense headache, vomiting, delirium and convulsions; a high degree of bilateral papillitis accompanied by early, total and permanent blindness; astereognosis, without any disturbance of general sensibility; absence of paralysis involving the extremities; only a slight, transient hemiparesis. The diagnosis of brain tumor involving the right hemisphere was made, but the exact location of the neoplasm could not be determined during life. In both cases the tumor was found in the right lateral ventricle, and proved to be sarcomatous. In another case which was under observation at present the patient was a girl of twelve years whom he first saw with her physician the early part of last Spring. She then showed all the indications of a brain tumor. A correct localization was made, and an exploratory operation advised. After several months' delay, during which time the patient became totally blind, an operation was consented to, and a cyst was found involving the

Rolandic area. Prior to operation, this girl, in addition to her blindness, was completely paralyzed on the affected side of the body. Immediately following the operation the paralysis began to improve, and the only symptom that now remained was the blindness. In that case, the speaker said, if the operation had been done early, the patient's sight would have been saved. In speaking of brain tumor of traumatic origin, to which Dr. Brush had referred in his paper, Dr. Leszynsky said he recently saw a man who gave the history of having received a blow over the right temple with a man's fist two years before. The blow staggered him, but he did not fall. A few weeks later he began to complain of somnolence, with occasional attacks of headache and vomiting. When he entered the hospital he was blind, and an examination of the eyes showed choked disk. A diagnosis of tumor involving the right hemisphere was made, and an exploratory operation was under consideration when the patient suddenly died. At autopsy it was found that a spicula of bone had broken off at a point just about an inch above the internal auditory meatus and had perforated the dura, and from this a large tumor had developed which pressed upon the temporal and parietal lobes of the right side. This case would have proved an ideal one for operation.

As to the treatment of brain tumor, the speaker, after referring to medication, said that in some cases lumbar puncture had given relief, while in others it had aggravated the pain and even produced death. It could not be looked upon as a safe measure in these cases. The decompression operation, as practiced by Cushing, of Baltimore, was of distinct value in relieving the pressure symptoms, and even the optic neuritis.

In dealing with cases of aphasia, Dr. Leszynsky said, a guarded prognosis should always be given as to a return of the power of speech.

DR. CALVIN F. BARBER said that in operating in cases of brain tumor the surgeon could elect either to make a bone-flap or remove the bone entirely. Both methods had strong advocates, and doubtless each possessed some special advantages. Personally he preferred removing the bone entirely and leaving it out. One objection to

the use of the bone-flap was that it was liable to give rise to necrosis. In the removal of brain tumors it was very desirable, he thought, that a sufficiently large section of bone should be taken out to enable the surgeon to work safely. If too small a section were removed, severe hemorrhage might be encountered, and this might necessitate a second, or even a third, operation. Tumors located in the region of the medulla were the most difficult to deal with. He did not think it advisable always to open the dura at the primary operation, as the simple removal of the bone often served to afford marked relief in the symptoms. He did not have much fear of sepsis in these operations, and had never seen it. He agreed with Dr. Leszynsky that trauma was at times the causative factor in brain tumor.

DR. J. RAMSAY HUNT, in speaking of the diagnosis of tumor of the brain, emphasized the importance of other pathological conditions that produced the general and local symptoms of cerebral neoplasm. Among these were acquired internal hydrocephalus, syphilis, and toxic states of obscure nature. Nonne had recently called attention to the importance of this group of cases under the title of pseudo-tumor of the brain, and had recorded cases, with autopsy, in which no pathological lesions could be demonstrated which would explain the symptoms observed during life; also cases which were clinically tumor, but in which the symptoms cleared up entirely, and where syphilis could be ruled out. In this connection, Dr. Hunt said he would like to call attention to chronic progressive softening of the brain, two instances of which had come under his observation. In one, a localized arterio-sclerosis, situated at the junction of the internal carotid, middle cerebral, and posterior communicating arteries, had induced a gradual and successive obliteration of the central vessels of the anterior perforated space, with small areas of necrosis, cavity formation, and sclerosis in the corpus striatum, optic thalamus, and internal capsule. The successive obliteration of the vessels had occurred in such a way as to produce a hemiplegia, with sensory irritative symptoms of very gradual development, involving, first, the face, then the arm, and later the leg; simulating the progressive lesion of a tumor. In the other case, a progressive hemiplegia developed on

the right side, with all the general symptoms of brain tumor, including optic neuritis. Post-mortem, the vessels of Willis were found free from sclerotic changes. The small, multiple foci of softening which were present in the internal capsules and basal ganglia on both sides were referable to arterio-sclerotic occlusions of the central perforating vessels. The optic neuritis might have been due to diabetes, which was present.

As regarded surgical intervention in cases of cerebral tumor, Dr. Hunt thought that an exploration was not only justifiable, but indicated, in all those cases in which the probable localization could be determined, provided the cerebral or basilar situation of the growth did not absolutely preclude the possibility of removal. Even if clinically the symptoms indicated a subcortical growth or deep-seated tumor, but with focal symptoms referable to the superior or lateral aspect of the brain, an exploratory procedure would be advisable; for even if the growth could not be extirpated, the relief of tension would tend to favorably modify the general symptoms, and preserve the optic nerves. In cases of non-localizable and inoperable brain tumors he thought the palliative operation should be performed earlier and more frequently than was now the custom. Cushing's procedure of decompression, forming a temporal or occipital muscular flap to prevent the formation of a hernia cerebri, was a most admirable one, and should be accompanied with but little danger.

DR. L. PIERCE CLARK emphasized the importance of having every case of brain tumor operated on before pronouncing it hopeless. During the past year he had seen three cases in which a material improvement, if not an actual cure, might have been effected by surgical interference. The ultra-conservatism that had been thus far shown in dealing with these cases from a surgical standpoint was no longer justifiable. As to cerebellar tumors, these were not as inoperable, at least in the early stage, as had been heretofore held. In the medical treatment of syphilitic gumma of the brain, Dr. Clark said, too much stress had been laid upon the value of the iodides, in preference to mercury: the latter drug should be pushed to the extreme before the iodides were given.

DR. RANSFORD E. VAN GIESON said he would like to say a word, based on his own experience, in regard to the attitude of the general practitioner in cases of long-continued headache. Instances of this in which the patient's faculties all remained unimpaired did not cause him any anxiety, but when the headache was associated with such conditions as loss of memory, it was evident to him that he had to deal with beginning arterio-sclerosis.

DR. C. G. AM ENDE said that a number of years ago he experimented quite extensively with protozoa under the microscope. In conducting these experiments, he obtained very reliable results by using a solution of boric acid, one drachm, in alcohol, water and glycerin, one ounce each. This left the most delicate tissue uninjured, but destroyed the life of the protozoa.

DR. WILLIAM B. NOYES said that in a case he had observed about six years ago, in which all the classical symptoms of rabies were present, the autopsy showed a massing of the round cells in the capillaries of the cord. This was before the discovery of the Negri bodies. Paralytic rabies was very rare in this country, but quite common in some parts of the world, particularly Turkey. He gave the details of a case of toxic neuritis, seen in consultation, in which the patient became infected from a dog supposed to be rabid. He was not bitten by the animal, but some of its saliva came in contact with an abrasion on the hand. The patient suffered intensely, but was not at all hysterical, and recovery occurred after about three weeks.

DR. FRANK MILLER, veterinarian, said that in the opinion of the best authorities, rabies never occurred from a superficial abrasion. It was necessary that the teeth of the animal should penetrate deeply into the flesh. He thought that the regulations in regard to dogs in New York were far too lax.

DR. IRA VAN GIESON agreed with Dr. Miller that superficial contact was not sufficient for the development of rabies. He was very glad to have Dr. Am Ende's suggestion in regard to the use of boric acid, and said he would certainly give the solution advised a trial.

In closing the discussion DR. BRUSH reiterated his opinion that traumatism was only a rare cause of brain tumor.

Stated Meeting, June 11, 1906.

DR. HEINRICH STERN read a paper on

LUPULIN IN THE TREATMENT OF GASTRO-INTESTINAL DISEASES.

After describing the physical properties and chemical composition of lupulin, he stated that an essential requisite to the efficacy of the drug was that it should be absolutely fresh. The lupulin which he had found most reliable in his physiological and clinical experiments was that derived from hops from Saaz, a little town in the Bohemian hop belt. He then went on to say that lupulin finds a special indication in the functional disturbances of the stomach: in sensory as well as motor neuroses, and in *neurasthenia gastrica*. Among the gastric neuroses of sensation in which it is of value is nervous anorexia. It may be prescribed in capsules containing 0.3 gm. (5 gr.) each: from one to three capsules to be taken with carbonated water one or two hours before meals. If a more energetic action is desired, the lupulin may be combined with berberine phosphate and capsicin. In the treatment of this and other functional disturbances he has often found the following combination especially useful: Lupulin, 0.2; condurangini, 0.01; cinchonidini, 0.05. D. t. dos. No. 100 in caps. gelat. Two capsules half an hour before meals, to be followed by one or two teaspoonfuls of whiskey or brandy. In hyperesthesia of the gastric mucosa, which, especially in chlorotic females, is often associated with such anorexia, and in which the patient suffers from nausea and a painful sense of gastric fullness, lupulin is best combined with silver nitrate, and here the capsules should be taken with half a wineglassful of lukewarm water. In exceptional instances it is advisable to combine lupulin with codeine, extract of belladonna leaves, or monobromated camphor. In the most painful of all gastric neuroses, cardialgia (gastralgie, gastric spasm, gastrodynia) lupulin is a valuable remedy, provided the pain is due to neurasthenia, hysteria, cholorsis or general weakness. During the acute attacks, when se-

vere, medication should not be administered by the mouth ; and this would preclude the employment of lupulin. When, however, the attack is less severe, and particularly in the intervals, the drug is of great service. In the less severe forms of cardialgia it may be given in gramme doses (in wafers or divided in capsules) repeated every hour, if necessary. The administration of spirit of chloroform or spirit of nitrous ether (the effect of which is prompt, but transient) does not interfere with the efficiency of lupulin, the influence of which is more lasting. In some instances it is advisable to administer lupulin in the form of suppositories, made with oil of theobroma or, preferably, as glycero-gelatinous hollow cones into which the drug is introduced. The following are good combinations for suppositories : Lupulin with extract of cannabis indica, lupulin with camphor and extract of belladonna, and lupulin with extract of belladonna and extract of physostigma.

The neuroses of gastric motility (increased as well as diminished peristalsis) often yield to lupulin. This is especially the case with the various forms of nervous vomiting, where this drug has a decidedly more lasting effect than either bromides or valerates, while it does not give rise to secondary trouble, as these are apt to do. In the vomiting of pregnancy a combination of lupulin and menthol has proved of advantage in many cases. In aerophagia and gastric spasm lupulin serves a good purpose. Besides the medicinal treatment, other therapeutic measures may, of course, be called for. In atony (diminished motility without demonstrable anatomical changes) the drug acts as a gastric stimulant. The fact should not be lost sight of that lupulin is not only a symptomatic remedy, but, since it stimulates the general and local circulation and improves the tone of the gastro-intestinal tract, it may also alleviate or eradicate the cause of certain alimentary disorders. Gastric secretory disorders of all forms and degree are usually greatly benefitted by it. In hyperchlorhydia a systemic effect is required, and the dose should be from 0.75 to 1 gm. Belladonna or atropine may sometimes be combined with it with advantage, but should be employed only for limited periods. In sub acidity or anacidity of nervous origin the local action is the one primarily indicated, and here a

smaller dose usually suffices. It may be advisable to combine it with such agents as those recommended for nervous anorexia, or to give bitter stomachics in addition to the lupulin. In the most frequent of the gastric neuroses, *neurasthenia gastrica* (the so-called nervous dyspepsia), which is a combination of the various neuroses mentioned, lupulin is indicated in the same manner as in the component neuroses, and it may be advantageous to combine with it an iron preparation or some other tonic. Although not to the same extent as in functional disorders, lupulin may frequently prove of service in diseases of the stomach having an anatomical basis; as in chronic gastric blennosis, or in gastrectosia both of mechanical and atonic origin.

The intestinal affections in which lupulin is useful, and even to a higher degree, are, as among the diseases of the stomach, the neuroses, the functional disorders. In intestinal diseases Dr. Stern's observations have led him to the following conclusions: That, administered by the mouth, lupulin should be given in capsules, that the dose should be one and a half times or twice as large as in analogous gastric disorders, that in disease of the colon or rectum suppositories (hollow glycero-gelatin cones, if possible), are to be preferred, and that the drug may be given for protracted periods without causing cumulative or other deleterious effects. In enteralgia opium is contra-indicated on account of its production of constipation. In the milder cases lupulin may be combined with acetanilide or hyoscymamine salicylate, and in the severer ones, with codeine and atropine. The motility neuroses of the intestine, as nervous diarrhoea, peristaltic unrest, enterospasm and nervous flatulency, are all more or less beneficially influenced by lupulin. Most cases of nervous diarrhoea are not due solely to hyper-motility, but also to abnormal secretory conditions, and the treatment should be principally dietary and physical. In the way of medication lupulin may be given in combination with ipecac or strontium bromide, or with tannigen, tannoform, tannopin or tannalbin. In some cases the combination with extract of cannabis indica, or with camphor and extract of belladonna, works well. In nervous flatulency, which always has a hysterico-neuropathic basis, and is often directly due to an accumulation of swallowed air,

lupulin is to be preferably combined with bromides. In some cases an easily digestible preparation of iron is of service as an adjuvant. Among the secretory intestinal neuroses, lupulin, alone or in combination, has proved of distinct value in mucous colic. It should be administered only in suppositories, which should be introduced high up into the rectum. This affection has an anatomical, as well as a neurotic basis, and internal medication is of secondary importance. The main reliance must be placed upon regulation of the diet, proper abdominal support, and high rectal medicated injections. A suppository containing lupulin, 1.0, silver iodide, 0.2, and powdered belladonna leaves, 0.1, Dr. Stern has found useful in materially reducing tenesmus and pain, or averting paroxysms altogether, as well as in diminishing or preventing the pathological accumulation of mucus and the formation of intestinal casts. In the treatment of intestinal diseases with an anatomical basis, while diet regulation plays the most important part, lupulin is often a symptomatic and occasionally a curative remedy. This is particularly the case in inflammatory conditions of the intestinal mucosa. In acute enteritis, after the complete evacuation of the bowels, when a sedative-narcotic-tonic medicine is indicated, lupulin will often prove of service either alone or in combination with opium, bismuth, mono-bromated camphor, or the modified tannin preparations. In chronic enteritis opium is entirely out of place, and lupulin is a useful adjuvant to other measures. On theoretical grounds Dr. Stern thought lupulin ought to be of value in dysentery and in typhoid and yellow fevers.

DR. ROBERT COLEMAN KEMP read a paper entitled
**SOME REMARKS ON THE RELATIONS OF THE
GASTRO-INTESTINAL TRACT TO NERVOUS AND MENTAL DISEASES.**

His remarks, he said, would be entirely based on the theory of "auto-intoxication," as brought out in the investigations of Bouchard, Vaughan, Novy, Herter, E. E. Smith, Hamilton and others. This field opened up enormous possibilities, and he believed the subject to be as yet only in its infancy. At birth the gastro-intestinal tract is sterile,

and in the new-born infant it is first infected by means of the air swallowed and then with the bacteria of the food and saliva. With normal digestion, fermentation of the carbohydrates is produced to a physiological degree by the micro-organisms in the small intestine, while the organic acids, lactic and acetic, the derivatives of such fermentation, which act as a stimulus to peristalsis, prevent the putrefaction of albuminates in that portion of the tract, and partly check the decomposition of the carbohydrates. In the large intestine, where putrefaction of the albuminates normally occurs, are developed skatol, which gives the odor to the faeces, indol, phenol, various gases and the other products of putrefaction, and the bacillus *coli communis* is believed to be an important factor in these changes. Putrificative bacteria are undoubtedly present at all times in the stomach and small intestine also, but their activity is there inhibited, unless conditions especially favorable to such activity arise.

Referring to agencies influencing the processes of digestion, he said that the normal peristaltic actions of the stomach and intestines are important factors in the prevention of abnormal fermentation, or putrefaction. This is liable to occur if simple atrophy of the stomach is allowed to progress to chronic dilatation. In consequence, there may be produced butyric acid, which is classed among the substances acting as autotoxins. Hydrogen sulphide is at times found in dilated stomachs, together with other gases the absorption of which cause toxæmic symptoms. Having mentioned other abnormal conditions, he expressed the opinion that a careful examination of the secretions and motor functions of the stomach was a prime necessity in any scientific research into auto-infection of the gastro-intestinal tract. In a recent work on Graves' disease, Dr. W. H. Thomson held that gastro-intestinal toxæmia was the cause of this affection, and that the implication of the thyroid was secondary. In the small intestine may be produced hypoxanthin, probably from excessive putrefaction, and methyl guanidin, a leucomaine resulting from the oxidation of kreatin and kreatinin, both of which are poisons capable of exciting convulsions. As in the stomach, stasis is here also an aid to putrefaction, and butyric acid and hydrogen

sulphide may be produced. In the large intestine, among the ptomaines found after prolonged stasis are cadaverin and putrescin, which give the symptoms of muscarine poisoning. Here, likewise, is developed indol, which Herter found to cause cardiac and respiratory depression and clonic spasms in animals. When taken daily in small quantities for several weeks, it produced nutritive changes, headache, colic, diarrhoea, unnatural mental activity, and a tendency to the neurasthenic state. Indol, when absorbed from the intestines, forms indican, and is so eliminated in the urine. The kidneys may become damaged from these toxins, and, in turn, toxæmia from the kidneys may result. Herter has demonstrated that the liver is the chief organ for the removal of indol; by it various toxins, as of typhoid, are similarly destroyed, or chemically changed. Therefore, any diminution of the functional work of the liver, or interference with its functions, impairs this property, and toxæmia results. The bile itself, when absorbed into the system, acts as a poison, and produces a definite toxæmia. Moreover, catarrhal conditions of the intestine will often cause obstructive jaundice, or the colon bacillus may infect the ducts and gall-bladder. Insufficiency of the biliary secretion, or the absence of bile from the intestinal tract, favors in turn those conditions which result in auto-infection. Nervous symptoms resulting from functional derangements of the liver are quite frequent. Cholin, which, existing normally in the bile, is increased in intestinal disorders, neurin, a derivative of cholin and still more toxic, and muscarine, often associated with cholin, are all capable of causing epileptiform seizures, and in large doses may cause almost instantaneous death in cats and rabbits.

Having dwelt somewhat longer on conditions affecting the action of the liver, in his description of the relations of the gastro-intestinal functions to toxæmia, the speaker called attention to the following propositions: (1) That epileptiform seizures, or even true epilepsy, may in some instances result from auto-infection; (2) that nervous, neurasthenic, or even melancholic systems may result from toxæmia; (3) that in many cases of nervous or mental diseases derangements of the gastro-intestinal functions, with resulting auto-infection, may aggravate the original

condition from which the patient suffers, and thus create a vicious circle; (4) that it is the duty of the physician to place his patients, whether inmates of public asylums or private patients, in the best possible physical condition; (5) that on the admission of every patient to an institution for the insane a thorough investigation should be made into the existing conditions in the gastro-intestinal tract, and appropriate treatment carried out; for by this means alone can a scientific study of the relations of toxæmia to nervous and mental diseases be made, and the results of treatment observed. The late Dr. E. C. Dent was one of the first to appreciate the value of this method, and it has already been instituted at the Manhattan State Hospital.

In his study of convulsive seizures in infants and young children, resulting from improper food, or from over-loading the stomach, Dr. Kemp said it had been possible to distinguish two classes of cases, the gastric and the enteric. In the gastric cases the seizures came on a short time after the administration of food, and emesis often produced immediate relief. He has noted acute dilatation, and believes this to be caused by auto-infection, resulting from fermentative or putrefactive processes in the stomach. Such attacks, successively repeated, may predispose to the convulsive habit, and become a factor in the production of epilepsy. In the enteric type the convulsions occur several hours after the administration of food, and are the result of toxæmia from the intestinal canal. They are relieved by the use of an enema, and, as an adjuvant, castor oil or calomel should be given afterward. Instead of these well-defined types, we may have a combination of the two. In speaking of epileptiform attacks in adults, he said that Mangelsdorf of Bad Kissingen had examined four hundred cases of epilepsy and several hundred cases of migraine, and found acute dilatation of the stomach just preceding or during the attacks. Another interesting type was gastric tetany, in which dilatation of the stomach was a factor, and a case reported by Smith was cited. The recurring attacks were entirely relieved by lavage and non-nitrogenous diet, but whenever the treatment was withdrawn symptoms at once showed themselves. Red meats, Dr. Kemp said, always tended to aggravate nervous conditions, and in the

modern treatment of epilepsy, as well as many other nervous diseases, it was customary to eliminate them from the dietary. In his own cases of epilepsy resulting from toxæmia he had noted that the patients were large eaters, especially of the red meats. Many other authors had reported cases similar to that of Smith, and in five cases given by Moynihan gastro-enterostomy was performed, with resulting cure. This was most significant, as by thorough drainage of the dilated stomach the recurrence of auto-infection was prevented. The brilliant surgical work of the Mayos among the insane and those suffering from nervous diseases was well known, and he believed that in certain cases of marked dilatation or ptosis of the stomach, with resulting auto-infection, surgery would in the future play an important part in relieving nervous and mental trouble.

In a number of cases of epilepsy seen during the past few years, Dr. W. H. Thomson had cured the patients by treatment of the gastro-intestinal tract. This treatment consisted of intestinal disinfectants, regulation of the bowels, and the use of diet and medication suitable to the individual case. Sodium bromide, combined with antipyrine, was given temporarily to lessen reflex irritability and break the convulsive habit. Recently Dr. Kemp had treated several cases of epilepsy which were unquestionably due to auto-infection from the digestive tract, and one of them he described in detail. Having spoken of some of the conditions found among the epileptics in the Manhattan State Hospital, and of the treatment now being carried out there, he stated that on Thanksgiving Day all the epileptics were given a full diet; with the result that every case had an exacerbation of convulsions. This, he thought, was very suggestive. An interesting class of nervous cases resulting from auto-infection was those in which ptosis of the gastro-intestinal tract was the primary factor. With the descent of the stomach and bowels there was a ptosis of the right kidney (sometimes of both kidneys) and there might be, in addition, ptosis of the liver and spleen. The gastric condition might be one of hyperchlorhydria, or hypochlorhydria, or even of *achylia gastrica*. It was a suggestive fact, in view of Dr. Thomson's conclusions in regard to Graves' disease, that ethylenediamin, a ptomaine found

by Kulneff in some cases of dilated stomach, would, when injected into mice and guinea-pigs, produce exophthalmos and some of the other symptoms observed in that affection. There seemed to be an unfortunate disposition on the part of neurologists to consider various gastro-intestinal disturbances in their cases as invariably the result of the nervous or mental disease. This was no doubt the case in some instances, but he thought that even now it had been fully demonstrated that in others the gastro-intestinal disturbances were primary.

In connection with the paper Dr. Kemp exhibited two charts. One of them was that used at the Manhattan State Hospital for the study of auto-infection, and the other gave the data in 13 cases of dementia paralytica investigated by Dr. Dent in that institution. In these patients the convulsions were diminished and the temperatures lowered as a result of the regulation of the bowels and treatment of the gastro-intestinal tract appropriate to each case.

DR. SAMUEL G. GANT read a paper entitled

APPENDICOSTOMY AND CÆCOSTOMY FOR THE
RELIEF OF CHRONIC DIARRHOEA—
REPORT OF NINE CASES.

It was generally conceded, he said, that diarrhoea, in the vast majority of instances, was due to pathological conditions existing at some point along the alimentary canal, and the prevalent opinion seemed to be that the condition inducing chronic diarrhoea was usually located in the stomach or small intestine, sometimes in the colon, and but rarely in the sigmoid flexure or rectum. It might perhaps be true that in most instances the original cause was situated in the stomach or small intestine, but Dr. Gant had become convinced that a large percentage of cases of chronic diarrhoea was directly traceable to disease in the colon, sigmoid or rectum, or at the anus. Certainly the original or persisting cause was found located in the lower bowel sufficiently often to warrant the assertion that in all cases of chronic diarrhoea the sigmoid and rectum should be thoroughly examined by means of the proctoscope or sigmoidoscope. Lesions in the colon, sigmoid and rectum

which originally resulted from irritating discharges from disease higher up in the alimentary canal not infrequently remained as an independent and continuing cause of diarrhoea long after the primary ailment the discharge from which brought them about had been relieved or cured. In the lower bowel the most common cause of chronic diarrhoea was colitis, and the inflamed and ulcerated condition of the mucosa of the colon might be the result of simple inflammation or due to trauma, gonorrhœa, syphilis, tuberculosis or amoebic dysentery, the latter having proved quite common in this country since the recent war with Spain.

When diet, internal medication, and irrigations had failed to arrest the progress of a chronic colitis, it was time to resort to such surgical procedures as colostomy, cæcostomy and appendicostomy. While Mayo Robson, in 1893, and Hale White, in 1895, had reported cases of colitis cured by establishing an artificial anus in the colon, colostomy for this purpose had not become popular because of the frequent and involuntary escape of gas and faeces resulting and because of the difficulties and dangers attending the operation to close the opening after the relief of the disease. The operation known as valvular cæcostomy, described later by Gibson, was preferable to colostomy, but at the present time appendicostomy, suggested by Weir and named by Willy Meyer, was most in vogue. The object of his paper, Dr. Gant said, was to give his experience in the treatment of nine cases of persistent ulcerative colitis and chronic diarrhoea by means of appendicostomy or cæcostomy. The outlines of each case were presented. In eight of them the appendix was brought up, attached to the skin, and opened, in order to permit through-and-through irrigation. In the remaining case the caecum was opened and a catheter introduced, after the method of Gibson, for the same purpose. His experience had been so gratifying that he had no more hesitation in advising these procedures for the relief of ulcerative colitis than he would of advising appendectomy for the relief of appendicitis. The operation of appendicostomy was comparatively simple, could be quickly performed, and was no more dangerous than the interval operation for appendicitis. In performing it the different operators varied the technique but little. The technique employed by him was as follows:

The abdomen is opened by a short intermuscular or gridiron incision, such as is made for appendectomy. The appendix is located, freed if adherent, brought outside the abdomen, and a probe inserted to make sure of its patency. If found to be too short, strictured, or otherwise unsuitable, it should be removed, and a cæcostomy performed. If, however, the appendix is sufficiently long and patent, it is ligated and cauterized. The cæcum at its base is sutured to the abdominal wall, and the parietal peritoneum, muscles and skin closed with plain catgut sutures. The appendix is anchored to the skin by one or two sutures, and the wound covered with protective tissue and gauze held in place by adhesive plaster. In some cases the meso-appendix was left intact, and in others the artery was ligated and the peritoneum stripped off; but apparently neither method had any advantage over the other. Usually the part of the appendix exterior to the ligature sloughs about the fourth or fifth day. The irrigations are begun immediately, with the use of saline solution, ice-water, or solutions of boric acid, potassium permanganate, phenol, krameria, ichthyol, mercuric chloride, or silver nitrate. It appears to make very little difference what irrigating fluid is employed, provided that it is used twice daily, and in sufficient quantity to thoroughly cleanse the bowel. About one quart is generally required.

In practically all cases the abdominal discomfort and frequent evacuations ceased immediately after the operation or after the first irrigation, and within a few days the stools became almost normal. The operation was not followed in any case by serious shock or great discomfort. In only one instance was there nausea, and in this it was due to the inclusion within the wound of a portion of the cæcum. Primary union occurred in all but two or three cases, where there were stitch abscesses. Only when the opening was small, or showed a tendency to close, was a catheter found necessary to enlarge it and allow free irrigation. The appendix was kept open for periods varying from three to twelve months. The opening closed spontaneously in some cases, while in others it was necessary to cauterize the mucosa in order to close it. The only unpleasant sequela was a small ventral hernia in one case, and this was be-

lieved to be probably due to the character of the incision, which in this instance, instead of being of the usual gridiron variety, was one carried directly down through the skin, muscles and peritoneum. In one attempted appendicostomy the appendix was found short or completely occluded; necessitating its removal and the performance of cæcostomy. In another the appendicostomy was successfully done, but through-and-through irrigation was rendered impossible by the existence of a stricture of the transverse colon, which was discovered at a second operation, when the appendix was removed and the abdomen closed. In one case the examination showed, in addition to the presence of ulcerative colitis, an invagination of the sigmoid flexure into the rectum. After appendicostomy had been performed the abdomen was opened in the left inguinal region, the sigmoid drawn up out of the pelvis and attached to the inner abdominal wall, and the wound closed. The patient, a man of 45, did well for three days, when he developed a high temperature and other febrile symptoms. On the fifth day he was anæsthetized, and sloughing of the appendix and a large part of the cæcum around its base was detected. He died shortly after the second operation. In three of the cases the diagnosis of amœbic dysentery was made.

DISCUSSION.

DR. WILLIAM H. THOMSON, discussing Dr. Kemp's paper, said that the subject was an almost limitless one, so that in the short time at his disposal he could take up but one or two special points. Rational therapeutics, by which alone we could deal successfully with any disease, was based primarily on an understanding of the nature of the disease. There was a radical and fundamental difference in nature between organic and functional disease of the nervous system—as much as there was between diabetes mellitus and small-pox. Nor should we treat functional nervous diseases and organic nervous diseases alike, because there was scarcely anything in common between them excepting the production of the nervous symptoms. For example, a case of hemicrania due to the presence of a syphilitic gumma was an instance of brain disease, although the patient might also suffer from vomiting and other symp-

toms. On the other hand, in a case of hemicrania due to migraine there was no brain disease whatever. A case of general paralysis of the insane was, again, an instance of brain disease, while a case of melancholia had nothing to do with the brain. Organic brain diseases were always due to a demonstrable lesion or injury, or to a degeneration of some part of the nervous texture, while a functional nervous disease had nothing to do with the brain texture, but was invariably due to a toxæmia. It was, therefore, of the utmost importance that we should recognize this distinction, and the failure to do this was a mistake made by many neurologists, by whom every derangement of function was supposed to necessitate an organic basis. With any derangement in the mechanism of an organ, there was a corresponding derangement in its function; but, on the other hand, the mechanism of an organ might be perfect, while the source of its function was deranged. Thus, all the functions of the nervous system depended on the blood supply as the source of power, and if the condition of the blood were abnormal, the functions would be perverted. In dealing with functional nervous diseases, the idea should first be gotten rid of that they were of less importance than those of organic character. On the contrary, many of the most serious nervous diseases were purely functional. Among such might be mentioned tetanus, hydrophobia and epilepsy; all functional nervous diseases, depending on the presence of certain toxins in the blood. Of course, the exciting causes of epilepsy were numerous, but the instability present was as much due to the condition of the blood as was the case in poisoning by strychnine. An organic nervous disease, due to an actual change in the nervous texture, was permanent, while intermittency was the special characteristic of all forms of functional disorders. There was absolutely nothing in the whole range of pathology which explained intermittency excepting a toxæmic condition. The same was true of neurasthenia and hysteria, and the study of the toxæmias giving rise to these various functional nervous disorders was still in its infancy. One of the arguments brought against the functional origin of many nervous diseases was the matter of heredity, some of the most prominent of these, as, for instance, epilepsy and migraine,

having this hereditary character. We were now being taught, however, that the most hereditary thing with which we had to do was the blood. The old saying, "Insanity runs in the blood," therefore, had a real meaning. Neurasthenia had nothing more to do with the nerves or brain than cancer had, and the same was true of hysteria.

The study of the toxæmias giving rise to these various functional nervous disorders was still in its infancy, and in the production of toxæmia perverted action in the gastro-intestinal tract was a most important factor. It was only within the past fifteen years that we had been able to commence to get some real conception of the processes of digestion, and we were learning something new about them almost every day. After referring to the interesting investigations of Pawlaw in connection with the secretions of the gastro-intestinal tract, Dr. Thomson said that unquestionably we had in these organs a more or less constant generation of toxins, in which the liver also took an important part. He was firmly convinced that it was along these lines that the solution of the problem of functional nervous diseases would ultimately be found. For forty years he had been making a special study of epilepsy, and since he had come to regard it in the light of a functional disorder he had found that it was relatively a curable disease. Some of the most unpromising cases of many years' duration had yielded, not to the routine bromide treatment, but to treatment directed towards correcting an intestinal toxæmia. The important point was to find the source of the poison. As to hysteria, this was by no means a trivial complaint. A confirmed hysterical patient was a pitiable object. Almost always in these cases there was chronic constipation. Then, the kidneys had to be considered. Habitually there was a very low percentage of urea in the urine, and this was not due to disease of the kidney itself, but unquestionably to deficient urea production in the liver. This could be demonstrated by the fact that under the administration of sodium benzoate and sodium salicylate, with naphthalene at night, the percentage of urea was markedly increased in a very short time.

DR. ACHILLES ROSE said he wished to emphasize the statements of Dr. Kemp in regard to the relation of cer-

tain mechanical conditions to various gastric and nervous disorders. As was apparent from the diversified arrangement of the muscular fibres, the physiological function of the abdominal wall, its muscles, fasciæ and sinews, was a complicated one, consisting in preserving the normal position of the abdominal viscera, and at the same time regulating the movements of the fluid contents of the viscera (secretions, etc.). When, therefore, the abdominal wall became atonic and relaxed, it could no longer support properly the viscera, nor control their functions. Consequently, these organs sank down from their normal positions, and this ptosis was conducive to many pathological conditions, affecting the liver, kidneys and uterus, as well as the stomach and intestines. The reflex effects of gasteropnia upon innervation and even upon the nerve centres were numerous, and especially was the circulation impaired, in consequence of the mechanical interference with it. Many cases diagnosed as hysteria, neurasthenia, or nervous dyspepsia were simply manifestations of atonia gastrica. By obtaining a clear insight into the mechanical changes, explanations were furnished concerning motor, sensory and secretory disturbances which had not been recognized before. Ideas as to therapy would suggest themselves in the way of balancing the various mechanical forces against each other and the intelligent exclusion of one factor or another. Mechanical expedients would in a great measure help in the achievement of good results. The object in utilizing mechanical force was to change the degree of involvement, to lighten overburdened points, and to place more work upon those which bore too little. That object we were able to accomplish by supporting bandages. Here there was a scientific foundation which in the fabric of medicine was frequently conspicuous by its absence. Medicinal treatment was frequently but a blind experimentation with unknown quantities. This could best be seen by comparing the medicinal with the mechanical treatment of gastropnia in some cases of neurotic affections, such as neurasthenia, hysteria and mucous colic. It was a natural suggestion to treat gastropnia, which was present in most if not all of these cases, by means of plaster strapping. Such mechanical treatment should not necessarily be the exclusive

therapy, but it was often the most important. The speaker said he had also found the treatment by means of plaster strapping very satisfactory in cases of chronic diarrhoea associated with atonia gastrica.

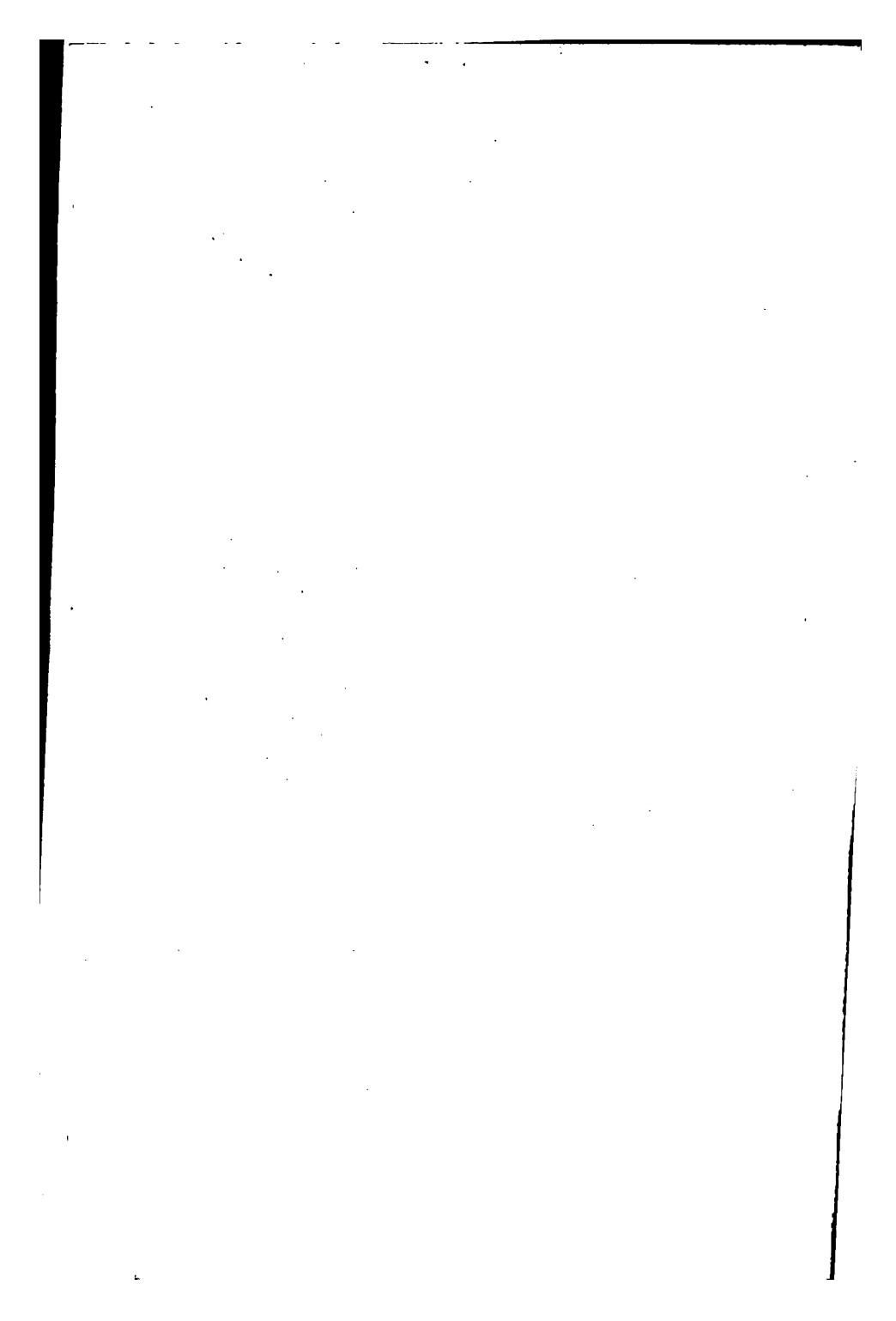
DR. EDWARD WAITZFELDER said he regarded the so-called functional diseases not as diseases but as reflex manifestations from the cerebral or spinal centres of irritation resulting from a change in the amount of blood supplied. He believed they were haemic in their origin and resultant from toxæmia which, acting on the smaller blood-vessels of the brain and spinal cord, induced a condition of either angospasm or angioparesis, in all probability the former. He thought, speculatively, that the condition was somewhat as follows: An error of digestion followed by the production of certain (as yet unknown) bacteria, the entrance into the blood of these germs and their toxins, the *chemical* irritation of these foreign substances on the centres in the brain and spinal cord followed by the nervous symptom-complex of the so-called functional nervous diseases, motor, sensory, trophic or psychic; a condition parallel to that seen in nervous symptoms accompanying chronic uræmia, the toxæmia of pregnancy, etc. Should this local angiospastic condition involve the vessels of the medulla and pons; a perversion of functions of those organs would result, among others a gastro-intestinal angioparesis; this in turn would aid in the process of auto-infection, possibly by lessening the normal number of phagocytes, enzymes, or other bactericidal agents the nature of which will have to be worked out in future observations.

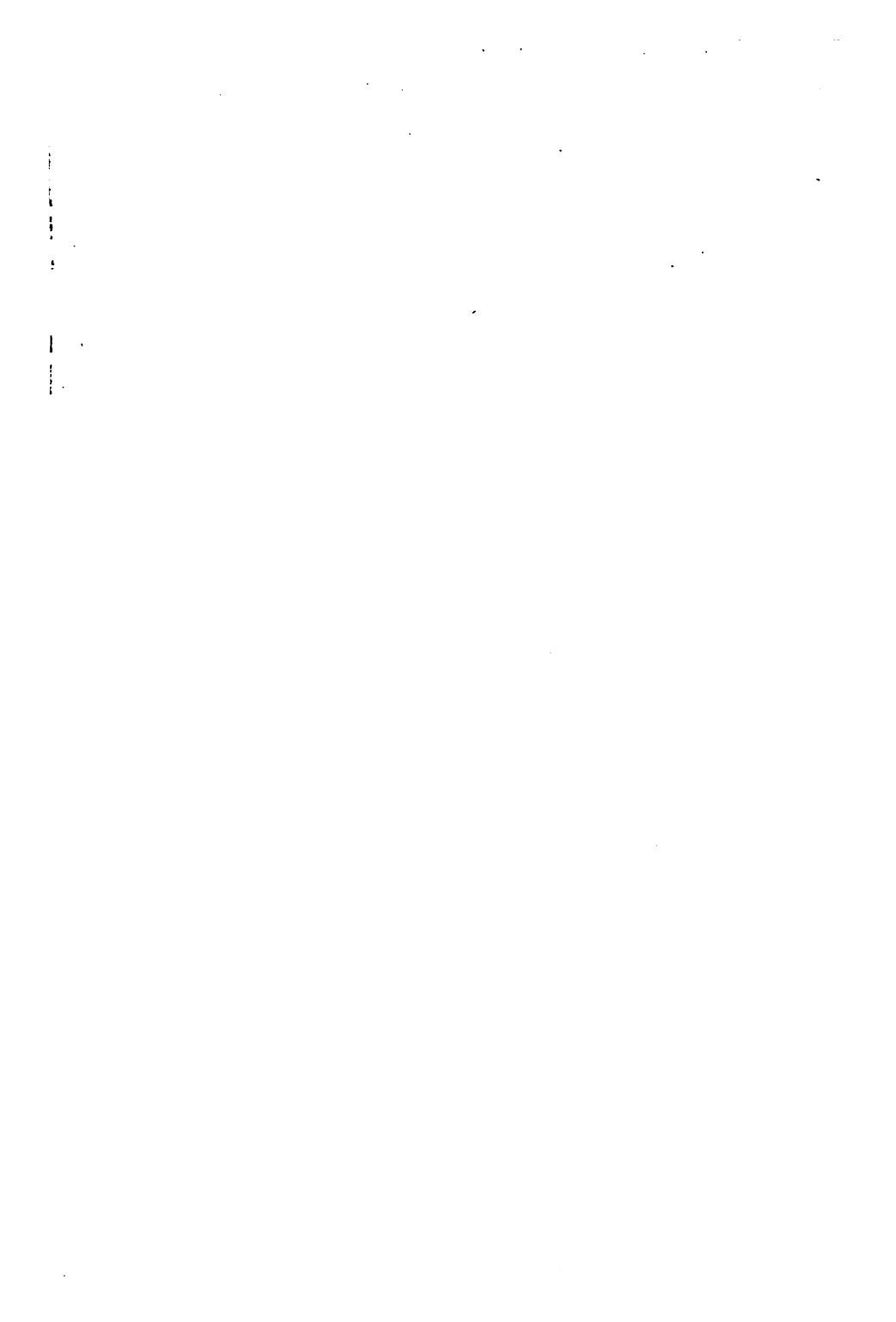
The speaker said he did not recognize hysteria, neurasthenia, chorea, exophthalmic goitre, epilepsy, or, in fact, any of the so-called functional nervous diseases as an entity, but merely as nervous symptoms-complex of a remote condition having a pathologic-anatomical or pathologico-physiological basis. He believed that the greater development of pathological physiology would help us to a better understanding of the etiology of the so-called functional nervous diseases. He agreed with the previous speakers that the treatment of these cases should be carried on along the lines of causation, and not that of symptomatology; that the latter was merely blowing away the smoke, leaving the fire

untouched. In the treatment of epilepsy he believed the elimination of the toxins, together with the correction of errors of digestion by medicinal or mechanical means, would lessen the number of attacks, although he doubted if it would effect a cure after a number of years of the disease, when the "epileptic habit" had been established. In this connection he desired to say that, in his opinion, after the function of a part has been impaired for a long time in consequence of an alteration of its nutrition, organic changes occur of a fibrous degenerative character, and an organic disease results, the lesions of which are permanent and from which complete restoration of function is impossible. This was seen in epilepsy, chorea, exophthalmic goitre, paralysis agitans, and the various nervous diseases following arterio-sclerosis.

DR. W. M. BEACH, of Pittsburgh, Pa., said he firmly believed that colitis was a prolific cause of nervous disorders. He also expressed the opinion that in the future the operation of appendicostomy would be more generally practised for the relief of chronic catarrhal conditions of the lower bowel, after other means of treatment had been exhausted.

In closing the discussion DR. KEMP said that in typhoid fever acute nephritis sometimes resulted in consequence of the toxæmia present. In some cases the colon bacillus was found in the urine. Under the administration of such anti-septics as urotropin and sodium benzoate the bacillus and the albumen and casts disappeared.







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